The Builder.

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SEVERAL correspondents have addressed us, complaining (some in unmeasured terms) of the deposition of the Architectural Drawings in the Octagon Room, at the Royal Academy; and urging the increased necessity of obtaining an architectural exhibition elsewhere. One letter to this effect we printed last week, and we will give a second as an exponent of the general feeling:—

"I perceive," says the writer, "that poor architecture is at last fairly driven into 'the black hole' at the Royal Academy: the mask will shortly be dropped altogether, and the utmost we may expect in a year or two will be, a stray drawing here and there, somewhere up out of sight, to be guessed at, hardly to be seen—even a hole of refuge will be suffered no longer.

This is the treatment the one art is receiving from the other. Call them sisters no more, since the one will seize all the patrimony and will drive forth the other—away—anywhere, but to rest *here* no longer. And what say the influential and respectable body of architects thereto? Again and again advertisements appear in 'The Builder,' calling on the profession to spare a trifle towards the rent of a room for the 'Architectural Exhibition.' Some respond: the greater number 'fear to offend the Academy:'—truly the Academy study them for their deference; or fifty trifling reasons may be found, sufficient to render them happy and contented, while they are being ridden over rough-shod.

Just so with competitions,—they will be jewed, cheated, robbed; but they will do nothing but bend their backs again for fresh stripes: the last thing is to combine and resist such imposition. A committee is formed of a few Quixotic individuals 'to do something;' but, perhaps, there are a few names in the list 'whom nobody knows'—or *this* public body has taken some part in it, *so that*—'having no connection with any other shop'—sleeps on in dignified torpor.

What wonder if the art languishes, when the majority of its professors, caring for nothing which will not feed their own personal vanity, gladly let all the rest go to the dogs, and will not understand how the raising and improving the position of the whole body would elevate each individual, and make him a beneficial return in the end. I should hope that what has taken place will be sufficient to put those gentlemen connected with the Architectural Exhibition who have assumed the labours and responsibilities of a committee, at once in possession of the necessary funds, and that a *permanent* institution of the kind will be established,—until Architecture is provided by the country with a suitable building, and the management of which shall be in the hands of Architects."

Now, it is right it should be understood that the responsibility of the step rests wholly with the Architect-Academicians, and that they were led to it through the smallness of the number of exhibitable drawings sent in, and a desire to obtain as much room as possible for oil paintings, of which a larger number than usual were submitted. We are enabled further to state, that it is not in any degree determined that this is henceforth to be the fixed hiding-place of poor English architecture, who is just now "catching it" from all hands, and has not a friend left to back her; but that if she appear in better clothes next year, she will be housed in her former quarters, and allowed to take again her share of the North Room with the painters, so that (to joke on a bitter subject) we may enjoy our "half-and-half" as before, such as it was. The octagon room is quite unfit for the purpose, notwithstanding the opening of a second window in it, and is altogether inadequate for such an architectural exhibition as the metropolis ought to make. We must say, however, as we said last week, that it is about as good a room as the collection it now contains deserves; but we must at the same time also repeat, that the Architect Academicians might and should have prevented this. "What is the use of having architects amongst us," two members of the Academy said in our hearing, a few days ago, "if they will not exhibit?" The remark may be worth the consideration of our brother-architects in the Academy, not as affecting themselves, but as touching future elections, and the position of the art they profess.

The collection consists of but eighty-seven drawings and one small model, and of these there are a dozen, such as Mr. Arundale's "Meeting of Godfrey de Bouillon and the Emperor Alexius" (309); "The Pulpit in the Church of St. Gudule, at Brussels," by Mr. Essex (285), &c., which cannot be strictly called architectural. The most important drawing, and a very cleverly executed drawing it is, is 250, "A Composition," by H. E. Kendall, jun., founded on a quotation from Rogers's "Italy," which describes,

> "A vast metropolis, with glittering spires,
> With theatres, basilicas, adorned;
> A scene of light and glory."

This is an endeavour to give examples of a certain style (in this case Italian), as applied to bridge, town-hall, and other buildings, disposed pictorially; and, though it may remind us in parts of "Rosherville," and be more noticeable for playful fancy than dignified beauty, it has many claims for praise.—— No. 241, "The Mansion now in progress of erection for the Earl Ducie, at Cromhall Park," by S. S. Teulon, is a Tudor building, with large tower and high roof, less successful as a composition than some previous works in this style by the same architect.—— 243 is a "North View of Preston Hall, near Maidstone," by John Thomas. There is a view, also, by Mr. Andrews, of Somerleyton Hall, the seat of Mr. Peto, (executed by Mr. Thomas), of which we shall give an engraving in an early number of our journal. ——251, "Design for the Cambridgeshire and Ely County Lunatic Asylum," by E. and S. Lapidge, is Tudor in style.——249, "Drummond Castle, Perthshire," shows a design for the restoration of the Keep, by G. P. Kennedy; and 259. "The Trossacks Inn, Loch Katrine," is by the same. This Inn, which has been erected for Lord Willoughby d'Eresby, has been mentioned by us before as in character with the scenery that surrounds it.——267, "New Wing at Adare Manor, Limerick," by P. C. Hardwick, is an exceedingly good adaptation of domestic Gothic, cleverly depicted: there is nothing better in the room.—— 260, "The Great Western Hotel, Paddington," by the same, will probably come out better on the ground than on paper. It has two high turrets (one at each end) and a central balcony is carried by sculptured figures.——A view of "Colney Hatch Lunatic Asylum," 271, by S. W. Daukes, is hung too low to be examined.——272. "The Goods Departure Warehouse of the Great Northern Railway at Battle Bridge," by J. L. Cubitt, is a very good drawing of a subject without any claims for representation. —— 282, by W. Papworth, is a study of Fenestral arrangement, — showing public entrance to galleries of art attached to a nobleman's residence. The building is very lofty: the portico and entrance somewhat of the smallest.——Two views of St. Stephen's, Walbrook, 289 and 297, are sadly out of perspective.——The design for St. John's Church, Hobart Town (288) by G. E. Street, has an enormous tower as compared with the body of the church and a high roof with louvres.—— 291, "Design for proposed Lunatic Asylum," by W. Boyle, is picturesquely treated. —— 318, "The Handley Memorial, Sleaford," by the same, is injured by the restriction of size for the base.*——292 is a view of Bishop Duppa's Almshouses, Richmond, now being erected, by T. Little (not F. as in catalogue). These are Elizabethan in style, and have the entrances at the back, which gives a novel aspect to the front. Mr. Little also exhibits a view of "St. Mark's Church, Regent's Park," (307).——294, "Design for re-building Blackfriars-bridge, and throwing open the West Front of St. Paul's," by A. Ashpitel, has the peculiarity of proposing the erection of shops on each side to pay the interest on the cost: midway the shops are omitted for a certain distance (as at Edinburgh) to give a view of the river. Were there any probability of this design being carried out, we should, with all regard for him, protest against any such obstruction of the river view. —— "Llanarth Court, Monmouth," (304), recently rebuilt with terraces by W. and E. Habershon, is Ionic, on a basement. —— 314, "Design for the proposed Improvement of New Cannon-street, City," by A. B. Blenkarn, has little out of the ordinary manner.——The piers of the suspension-bridge over the Thames, just now commenced near Chelsea Hospital, will be of curious Moorish design if carried out in accordance with 315, by T. Page.

We will take this opportunity of recording that the Academy dinner of this year was distinguished by a speech from Prince Albert, expressive of His Royal Highness's esteem for the President, Sir C. L. Eastlake, of the consideration due to every artist, and of the continued favour with which the Academy is regarded by the Crown. On the second head the Prince said, "The production of all works in art or poetry requires, in their conception or execution, not only an exercise of the intellect, skill, and patience, but particularly a concurrent warmth of feeling, and a free flow of imagination. This renders them most tender plants, which will thrive only in an atmosphere calculated to maintain that warmth, and that atmosphere is one of kindness—kindness towards the artist personally, as well as towards his production. An unkind word of criticism passes like a cold blast over their tender shoots, and shrinks them up, checking the flow of the sap which was rising to produce, perhaps, multitudes of flowers and fruit. But still criticism is absolutely necessary to the development of art, and the injudicious praise of an inferior work becomes an insult to superior genius."

* This is more apparent in a lithograph of the Memorial which has just been published for the architect by Ackerman.

REMARKS ON THE SYSTEM OF SMOKE-CONDUCTION AND VENTILATION ADOPTED AT OSMASTON MANOR.*

Four centuries have hardly elapsed since our forefathers found it necessary, for their personal comfort, to construct fire-places and flues in the walls of their houses, for the consumption of fuel and the removal of smoke; and it is well known how the skill of their architects converted the chimney stack and its terminations into picturesque, and even highly ornamental, features. It must also be acknowledged, that little progress, if any, has been made by their descendants, in improving upon the models thus bequeathed to them. In modern times, however, the superiority of workmanship exemplified in closely-fitting doors and windows, has rendered it highly requisite that greater attention should be given to the construction of chimney openings and fire-grates. Volumes of scientific research, and records of the application of true principles, have been published, and very great improvements have been made in the form of the chimney-back and the open grate; but the separate flue, with its consequent termination, has continued to retain its ordinary form, and, though the stack and the shaft have been varied to suit the architectural character of the building, the attempted cure of smoky chimneys has been confined to the mouth of the flue, or to innumerable contrivances at the top of the stack.

The system of smoke-conduction and ventilation now proposed for consideration has no claim to novelty, except in one particular, as partial combinations of smoke and ventilation flues have been adopted for several years in places where peculiarity of situation, or other circumstances, rendered the application necessary. Indeed, the germ of the principle of descending and ascending flues is observable in the well-known ventilation of mines, in which the air, sucked downwards through the short leg of the downcast shaft, traverses immense galleries, carrying with it smoke and foul air, and is ultimately discharged at the top of the upcast shaft; the greater altitude of the latter, combined with the application of strong heat at some part of its length, causing and increasing the draught.

The particular points of difference which the present example presents, in comparison with others of a like kind, consist in the application of the principle to a residence on a large scale, having open fire-places, and in the traction of all the smoke and foul air generated in the house, offices, stables, conservatories, and greenhouses, into one large detached vertical shaft.

Mr. Francis Wright, with whom I had the pleasure of co-operating in the erection of his house, and to whose energy and fixedness of purpose the successful result in this instance is mainly attributable, intended at first to erect a house with high pitched roofs, gables, and chimneys; but the situation being high, it was considered that the irregular points of such a building would hardly form a satisfactory sky-line, and it was therefore abandoned for a design, marked by horizontality of general form, in the style of James I. It was moreover thought desirable that the roofs should serve as terraces or platforms, at different levels, from which the beautiful scenery of the adjacent country might be enjoyed, without inconvenience from smoke. As the use of ordinary chimney flues and stacks would have been incompatible with this condition, recourse was had to Mr. Sylvester's suggestion for the removal of the smoke, by the means which would also prevent its return into the rooms, and allow such a combination of the ventilating arrangements, as would render the action of the whole efficacious and regular. At this stage of the proceedings, Mr. Sylvester was called in, and this portion of the work, with other economical arrangements, has been carried on, more or less, under his direction.

From observation and experience it appears, that the principle now under consideration can only be successfully carried out where the following conditions are fulfilled:—

1. The addition of a system of artificial ventilation, whereby the quantity of air necessary for combustion is supplied in a pure state, which, in its progress to the chimney, changes the air of the apartment.

2. The perfect insulation of the flue, so as to be free, if possible, from the influence of atmospheric changes, and the temperature of the external air.

3. The securing, as nearly as possible, an equable temperature throughout the whole length of shaft.

4. The application of heat at the base of the vertical shaft, sufficient to force the current upwards, at the point where the horizontal flue is connected with the chimney stack.

5. The absence of all right angles in the connection of the collateral flues with the main ducts, on the principle which would be most efficacious in promoting the rapid and unchecked flow of water in pipes or drains.

6. Such a height of shaft as shall always be considerably above the highest fire-place in the building, increasing in an accelerating ratio with the heights of the fire-places above the level of the horizontal duct. The upper part of the chimney stack should be entirely clear of all surrounding trees or buildings, otherwise a turn-cap may be necessary to prevent downward currents in storms or windy weather.

In the case of a large house, with its numerous apertures enveloped by a medium ever in motion, and with its internal atmosphere more or less sympathetic with the currents of the outer air, a variety of novel circumstances are called into operation, which complicate the action of the simple principle, and increase the difficulty of its application. The general system observed in the plan of Osmaston Manor, is the combination of the portion used as a dwelling, with its domestic offices, stables, conservatories, and gardens, in one connected arrangement, by which the distance of the kitchen gardens and hot-houses is also reduced to the least space, compatible with a due regard to appearance and shelter. The general cold-air shaft forms a tower at one angle of the kitchen, and it is connected with the heating apparatus by means of the underground shaft, shown on the basement plan. The upper part of the shaft is provided with a turn-cap, moved by a spindle and vane, which insures the regular supply of air downwards, by keeping the open side of the cowl always turned towards the wind. There is also a central tower in the house, rising to the height of 80 feet; and a clock-tower at the angle of the conservatories forms the centre of the stable court.

The smoke-shaft is placed in the centre of the kitchen garden at a level 20 feet higher than the ground floor of the house, and a rise of several feet is thus obtained throughout the underground main flue, from the retaining wall to the base of the shaft, which is in itself favourable, as it increases the velocity of the current.

As to the manner in which the fire-grates in the rooms are set, the formation of the back, and its connection with the flue,—the back hearth is a grating, under which there is a shuttle, which, being opened, allows the ashes to fall into the smoke flue, into which all accumulated dust and light ashes are removed immediately by the strength of the current, without the slightest inconvenience in the apartment. The front hearth and grating are cast in one piece, and the former is generally covered with Staffordshire tiles, through which a considerable amount of heat is transmitted from the radiation of the iron. The back of the grate is formed with louvrings, through which the smoke passes into the flue, the size of the opening being regulated by a rod connected with the front of the fire-place.

The ordinary smoke flues are formed of elliptical Staffordshire tiles, which, being glazed inside, do not allow any considerable accumulation of soot, and descend as nearly vertical as possible to the underground brick flue. These horizontal or secondary tunnels are built of brick or stone, perfectly air-tight, and they form invariably a very acute angle at their connection with the main tunnel, so as to offer the least obstruction to the forward current. In the construction of the main underground tunnel between the building and the smoke shaft in the kitchen garden, the sides, bottom, and arched top are formed of nine-inch brick-work, between which and the earth the outer space is filled up with solid concrete, care being taken to preserve good drainage from the same underneath the inverted arch of the tunnel. The whole of the outer surface of the upper vault was covered with tar, burnt into the joints of the brick-work, over which a coating of gas tar and gravel, 3 inches thick, was spread, to receive the concrete. By the use of stone springers, the inner arched flue was constructed of half brick (the arch being turned in short lengths), and it is thus surrounded by an air-tight vacuum, which serves as a non-conductor of atmospheric influence, while the other means adopted are effectual in rendering the whole water-tight. The horizontal tunnel has a double connection with the great shaft; and the boilers used for heating the hot-houses and garden walls, being fixed immediately under this part, effectually accelerate the draught in the curved junction between the horizontal tunnel and the vertical shaft. It is proposed to fix a small gasometer in this part, from which the gas will be conveyed in pipes throughout the smoke tunnels.

In assigning to the main descending and ascending shafts their relative position upon the plan, we were governed by local circumstances, and considerations of obvious convenience in the arrangement. As the architect is generally trammelled by such considerations, it will not be of any practical utility to give rules for the relative position of the shafts, further than that, where possible, it is better to place the air-shaft towards the direction of the prevailing wind, which in this country blows most frequently from the west.

The shaft is 150 feet high from the ground, which is at this point 32 feet above the cellar floor level: there is, therefore, a total altitude of 182 feet for the ascent of the smoke to the ultimate discharge. This shaft, with the whole of the external face of the walls of the house and offices, is built of dark gray limestone obtained in the neighbourhood. It is 21 feet square at the base, and 17 feet square at the top, under the corbelled cornice. It stands exactly in the centre of the middle garden wall: on each side, ranges of hot-houses are in course of erection. The smoke shaft is circular, 8 feet in diameter internally, and stands, for its entire height from the ground line in the garden, quite free for the outer casing: the space between the shaft and the outer wall of the tower is occupied by cast iron winding steps, with landings at every eighth step: they are laid into the outer, but do not touch the inner wall. Very easy access is thus given to the gallery at the top, which commands fine views of the property, and the surrounding country. This mode of construction is applicable to large chimneys of every description. The instability of many large shafts is owing to the disturbing effects of the expansion of the brickwork near the heated smoke current, which has sometimes a temperature of 200° to 300° above that of the external air, and the consequent expansion varies from 1 to 2 inches.

The cold-air shaft is 8 feet square internally, 12 feet square externally, and 63 feet high from the ground line in the kitchen court: it is provided with a turncap and vane, to render the action constant and unvarying, and is connected with an underground flue, of the same dimensions, running parallel with the horizontal smoke tunnel, and supplying the heating apparatus with pure fresh air, whence it is transmitted to the apartments in a very agreeable condition. A constant circulation is maintained from the apparatus, in winter and summer, throughout the apartments, to the several chimneys or other ventilating apertures, until it ultimately finds its way to the top of the large shaft. Hot water apparatus, upon Mr. Sylvester's principle, is fixed in certain portions of the distant flues, so as to render the action as regular as possible throughout the whole of the apartments. Connexions are also formed by flues in the wall with all the baths, water-closets, or other places where

* From a paper read at the ordinary meeting of the Royal Institute of British Architects, by Mr. H. I. Stevens, on Monday, April 28th.

ventilation is required; all of which are ultimately united with the grand arterial conduits.

Some description of other arrangements at Osmaston Manor may prove interesting:—

The coal-yard is placed in the centre of the stable and kitchen courts: it is, however, passed without notice in consequence of its being several feet below the court, on the same level as the passage leading to the stokery, and communicating with the brewhouse and cellars. On the inclined floor of this passage a tramway is laid, with turning-tables at the angles. The trucks running on this way convey wine and malt liquor into the cellars, and by means of a hydraulic lift connected with it, coals or heavy goods are raised to the bed-room floors, without the slightest interference with the staircases in the house. The principal lift rises to the height of 40 feet from the cellar floor, and has a well or cylinder of the same depth below, in which the plunger works: the machine is put in action by the introduction of water at the bottom, which, by its pressure, forces the piston upwards. There is another lift, connected with the scullery, for the use of the kitchen offices.

The boilers, attached to the heating apparatus, and supplying hot water to the baths and house generally, are fixed immediately under the brewhouse, and the pipeage from them is intended to heat the conservatory also, while a large plunge bath is rendered tepid from the same source.

The whole of the building is rendered fireproof by the use of cast-iron girders, supporting brick arches, which form the floors and roofs. The upper surface of the roofs was first levelled with concrete: bricks were then laid at distances of two feet, forming a succession of gutters, with a sufficient fall to the cast-iron gutters. The whole was then floated over with Roman cement, and covered with thin sheet lead. The slates are one inch thick, polished on both sides, cut to a regular gauge and size by the workmen, and merely laid on the ridge part, without any other assistance to form the joint than the accuracy of the cutting. The surface is now remarkably level, and has not undergone the slightest change since the roofs were finished. I should not recommend the use of Roman cement immediately under lead, but I should prefer tiles, made so as to form the ridges and gutters, on which the lead might be dressed; as, where the surface of the lead is in contact with the cement, oxydation is found to be going on to a considerable extent, from which those parts which touch the brick only are perfectly free.

A considerable collateral advantage is obtained by the adoption of flat roofs, and the remote discharge of smoke. The portion of the offices occupied as larders and dairies, being covered in a similar manner to the principal part of the house, forms an excellent drying yard, accessible from the landing of the laundry stairs, and screened by perforated stone work, so as to be entirely out of sight, except from a high level.

The system of smoke conduction which I have described has now been in operation for two years, and, as far as regards the general principle, it must be pronounced quite successful. Mr. Wright assures me that smoky rooms are unknown in his house, and that the ventilation is perfect and most agreeable. The rapidity of the current is increased considerably when the wind is high, but there is at all times, even under the most unfavourable circumstances of density in the atmosphere, a free discharge of smoke and foul air. A genial warmth from the heating apparatus is always diffused throughout the passages, and in the remote corners of the rooms where the radiating influence of the fire cannot extend. The roofs are also perfectly accessible, and free from the slightest taint of soot or foul air.

It is not my intention to advocate the system for general use, as in numerous cases it could not be applied, and it is probable that the extra cost would, in the generality of practice, prove a barrier to its adoption. There is, moreover, no doubt that the situation of Osmaston is peculiarly favourable for the application of Sylvester's principle, built as the house is on hanging grounds, with a considerable elevation behind, by which the relative altitude of the great shaft is increased, and the discharge is obtained clear above all surrounding objects.

There are, however, few public buildings on a large scale in which the system might not be advantageously employed, and the lunatic asylum near Derby may be mentioned as an instance in which the result is found to be quite satisfactory, while the architectural difficulties have been surmounted in a very successful manner. The absolute necessity for a great height of shaft precludes its adoption in small houses, unless in ranges of combined dwellings. The removal of the ashes and soot being effected at the bottom of the flues, is a very important advantage, and when the latter are properly constructed, they rarely require sweeping. The distance of the shaft from the house, as at Osmaston, is not at all necessary, as there is no objection whatever to its being built in the centre, with the apartments grouped round it; in which case, a tower rising out of the mass would form, under skilful treatment, a highly picturesque feature, and under such circumstances, it would only be requisite to make the height of the smoke shaft as much above the highest fire-place as is requisite in ordinary cases to ensure draught, while the flues need not descend, but they might traverse the walls to the place of connexion with the vertical tunnel: of course, in such instances, due allowance must be made for loss of draught by friction, according to the distance which the smoke travels horizontally to the main shaft. Only a very slight space is required for the passage of smoke and vapour, when the fires have been lighted a short time in the grates at Osmaston: indeed, I have observed on several occasions that the opening of louvres at the back of the fire-place did not exceed one inch superficial.

Other objections may be raised to the application of the system besides its expense, such as the disagreeable appearance of a house without chimneys, and the discharge of a large body of smoky vapour from one shaft, instead of small quantities from numerous smaller ones: still these objections are only incentives to invention; and as the principle is right and philosophical, and has been proved by successful operation, we may expect that vases, balustrades, and statuary works will supply the place of chimneys, and that we shall soon learn to consume the carbon of the smoke, and to reduce it, as nearly as possible, to clear vapour.

In reply to numerous questions from members, Mr. Stevens said, that the expense incurred at Osmaston was much greater than it would have been if the house had been constructed with ordinary chimneys, but he did not think it could be taken as a fair example of the best mode of applying the system, which could be carried out in a cheaper manner. In the present instance it had cost about 5,000*l.* of the total sum of 50,000*l.* to 60,000*l.* which had been expended. The pure air shaft was used for the ventilation of the house generally, so that coolness in summer could be ensured as well as warmth in winter. The highest fire-place was 34 feet 6 inches above the floor line of the principal rooms, and the flues from all of them descended to the horizontal shaft, which was 8 feet square, and ended in the upcast shaft. The latter rose to the height of 150 feet above the highest fireplace. The chimney flues were formed of tiles, made in the form of a parallelogram, 14 inches by 10 inches, with the corners rounded off. That size was retained when the flues became horizontal, and when they entered the main shaft a space of 144 inches was allowed for each downward flue. He was of opinion, however, that there would be no danger, and certainly a saving of expense, if the vertical portion of the flue were made smaller to the extent of about one-fourth, which would allow a proportionate saving in the construction of the main shaft. There were flues in the external walls, but they were so built that it was hardly possible that they would be acted upon by the atmosphere. Alluding to the construction of the main upward shaft, he observed, that if all chimney flues were built and kept with an air-tight space around them, there would not be such frequent complaints of smoky chimneys. The fire in the grates at Osmaston was made upon a grating at the level of the floor, and the ashes fell through it into an ash pit, which could be cleared by drawing away the moveable hearth, or the ashes might be allowed to pass through the opening and to fall to the bottom of the flue. The draft being strong, and every part of the work fire-proof, there was no apprehension of their catching fire, in the event of any ignited soot finding its way to them. Unless there were a number of fires burning at one time, there might be some difficulty in maintaining the draught, if the fire was not constantly kept up at the bottom of the great shaft. The removal of the soot was provided for by the size of the flues, all of which were large enough to receive a man. He was informed that the application of this system to the Bath Gaol added 5 per cent. to the cost of the building. The draught was not prejudiced, but, on the contrary, rendered stronger, by the windows being opened; nor would the draught of the rooms having closed windows be affected by the windows in the other rooms being opened. The division of the horizontal main flue into two branches, at its entrance into the upright shaft, was occasioned by the position of the shaft with reference to the house; the latter facing to the south-east, whilst the former faced the four cardinal points. The inner circular shaft was of 9-inch brickwork, without iron bands, and, from a point indicated in the section, it stood entirely separate from the outer walls, to the very top. The stairs formed a spiral round the shaft, but the steps were not at all connected with it, nor did they even touch it: they were formed of plates of cast-iron, let into and supported by the outer wall.

The outer square casing was of brick and limestone; in the thinnest part about eight inches thick. With respect to the height and capacity of the up-shaft, the general proportion was 144 inches for each flue that entered it, both horizontally and vertically; but he believed that proportion might be reduced. The height of the shaft must be regulated by the distance the smoke had to be drawn downwards, the friction increasing in an accelerating ratio in proportion to the height; but if there were fires on the ground floor only, a very low shaft would be sufficient. The shaft at Osmaston was five times the greatest height from which the smoke was drawn: he believed that it was higher than was necessary, but he was not able to lay down any rule, as it must depend on the locality. There was no advantage in placing the shaft so far from the building: Mr. Wright's wish was to convey the smoke entirely away from the house, and it was found that if the shaft had not been of a considerable height, in some states of the wind, the smoke would have been blown back again. At present, even in the worst winds, the shaft stood so free, that the draught was not at all affected, even in the farthest flues.

To an inquiry, how fresh air was introduced into the various apartments, Mr. Stevens replied that, in some instances the air was let in at the floor level, by gratings in the skirtings; but he intended, in the rooms about to be finished, to introduce it at the top. He believed that Mr. Silvester considered that mode preferable to the former, as the fresh air mixed better with that of the apartment, and persons were not so likely to feel the draught. The vitiated air would then escape at the chimney, which was in fact the ventilator. It was desirable to introduce the air in as large quantities as possible, so as to have much more than was required. The smaller the current, the greater was the sensation of draught.

To an inquiry, how the warm air was introduced into the rooms, and whether the downward shaft was provided with any machine to ensure a supply of fresh air, Mr. Stevens said that the down-shaft was provided with a turn-cap and vane, which had the effect of turning it to the wind, so that the passage of the air was always constant and unvarying. From that shaft the air passed along a duct to the

heating apparatus, a series of vessels placed together, in which hot water circulated. After being thus warmed, the air passed into a flue, and so upwards in the brick-work of the walls to any part of the house. He had generally thought it best to introduce it into the apartments near the windows, so as to check the current of cold air in that part of the room. He believed it had been found that, by introducing the air at the bottom of the room, the draught became so rapid as to prevent the ventilation of the upper part of the room, and that was one reason for proposing to introduce it at the top.

THE INSTITUTE OF BRITISH ARCHITECTS.

The following is a list of the office-bearers elected for the ensuing year:—*President*—Earl de Grey. *Vice Presidents*—C. R. Cockerell, C. Fowler, P. Hardwick. *Honorary Secretaries*—J. J. Scoles, C. C. Nelson. *Honorary Secretary for Foreign Correspondence*—T. L. Donaldson. *Honorary Solicitor*—W. L. Donaldson. *Ordinary Members of Council*—J. B. Bunning, T. T. Bury, B. Ferrey, H Garling, J. Jennings, H. E. Kendall, jun., J. W. Papworth, G. G. Scott, Sancton Wood E. Woodthorpe. *Treasurer*—Sir W. R. Farquhar, Bart. *Auditors*—E. Christian, Fellow; S. J. Nicholl, Associate.

THE INTERNATIONAL EXHIBITION.

MACHINES IN MOTION.

ONE of the *lions* in this department of the Exhibition is Appold's Centrifugal Pump, which seems indeed to rank next, in attraction as well as in noise, to Applegath's wonderful printing machine, by which *The Times* and *The Illustrated News* are printed. By means of a little wheel, 12 inches in diameter, with twisted apertures, radiating from an open central space, there is made to rise to the roof of the department a mass of water which produces a broad and heavy, noisy, and continuous waterfall that might turn a powerful water-wheel. Of course, however, to produce this striking result, sufficient power is requisite to produce that rapid revolution in the little wheel which does the work. The wheel itself contains only a single gallon of water when its apertures are full, yet, by being made to revolve at the rate of 607 revolutions in a minute, it lifts no less than 1,800 gallons in course of that time; so that it must be filled and emptied about three times in the course of every revolution. In fact, the disc, once under water, where it works, may be said to carry the water through its apertures in continual streams, or threads, or cables rather, of water, forced out at several interspaces by the centrifugal power of its rapid rotation; so that the weaving of such threads of water is not so fruitless a process as the ancient one of twisting ropes of sand. By the way, could not quicksands themselves be very rapidly scooped out by a machine somewhat like this?

The direct purpose of Mr. Appold's invention, which he has most liberally made a present of to the public so far as regards any private patent right which he might have reserved to himself, is for the drainage of marshes; but to this might also be added such other uses as that of clearing cofferdams for docks, &c. Indeed, it is stated by the inventor to be "particularly well adapted for a tide-pump, discharging more water the lower the lift, the pump going the same speed; while other pumps discharge only their contents, no matter how low the lift." The machine at work was manufactured by Messrs. Easton and Amos, of Southwark. We examined the interior of the perpendicular *leader*, if we may so call it, through which the water is lifted from a narrow slope below, in order to assure ourselves that the disc or wheel was of something like the dimensions stated. A small one was also exhibited, which, though only three inches in diameter, evolved 150 gallons a minute, and sent a strong jet up to the roof. A modification of Mr. Appold's invention, though called "Bessemer's centrifugal disc-pump for draining land," is also exhibited. The disc is 6 feet in diameter, and it discharges 20 tons a minute. There are also other interesting forms of the same centrifugal principle, such as a disc-pump for locomotive engines.

Near these machines Messrs. Holtzapffel & Co. have erected a pretty little miniature shop, containing specimens of ornamental and fancy turning, an amateur turning-lathe, and other apparatus; and behind this curiosity-shop we have another erection, to show "the imperishable water-shoot" for the improvement of labourers' cottages and other buildings, by dispensing with all external wood and metallic work on roofing: the invention consists simply of a *tile* eaves-gutter, in place of a leaden, zinc, or wooden one. The roof-tiles, or slates, of course, lap over this gutter, which takes the place of the edge-row. The only "machinery in motion" here is a stream of water issuing from pipes, and running, as rain does, over the roof and into the tile-gutter. The mode of joining the lengths of gutter, an important point, seems questionable.

Armstrong, of Newcastle, has several of his simple and useful hydraulic machines at work near this spot. The rapid wheelings, liftings, and lowerings of a little model crane, with a comparatively heavy weight attached, speak well for the utility of an invention which we long since recognized as a hopeful one, whether applied to cranes or to various other purposes, wherever a common water-pipe can be laid on with water from a proper level. A machine for hoisting sacks is also exhibited.

The next machine we have noted is a model sawing-machine for quarry work, sent from Bath, by Messrs. Randall and Saunders, of Orange Grove, who have the original, and we believe as yet the only one, in use at their quarries at Corsham. By this machine the stone is cut from its natural rock according to the thickness of each stratum, the saws only cutting in the line of depth, or rather at an angle of about 45 degrees. The strata, as illustrated on the model, assume, under the operation of this machine, the shape of a flight of steps, and the saws run from top to bottom, and simply cut into the face of the whole flight. The apparatus, at the Corsham Quarry, works eight saws, which are 24 feet long. By a simple arrangement each saw is allowed an action independent of the others, and can be worked at any angle. In case of an impediment, it is arranged for either saw to stop before it is strained, and without interfering with the action of the others. This machine does the work of seventy men. When the stone is cut out into blocks, it is removed by a traversing crane worked by the same ropes which work the saw frame, and both are driven by steam power. The same persons exhibit a model of their balance saw-frame, which is constructed on a new principle for sawing blocks of stone, marble, &c., either by steam, horse, or hand power; and with this machine is shown a model of a portable balance hand-saw frame, for working one or more saws by hand power for cutting stone or marble. Both are worked at an angle, like the quarry saw.

Messrs. Randall and Saunders also exhibit a brick and pipe making machine with double screw press and perpetual cutter, adapted for making their patent draining bricks, for sewerage purposes, and of which a description has appeared in our pages.

A patent rivetted-iron, square-cellular crane, rising in the form of a quarter of a circle set on end, with the chains running through the interior of the tube, is exhibited by Mr. Fairbairn, of Manchester. Its height is probably 18 to 20 feet. The same manufacturer exhibits an improved patent rivetting machine, of massive proportions. Near it is another from Dukinfield's iron works,—Garforth's patent direct-acting steam-rivetting machine for steam boilers, &c. The advantage of such machines is said to be that, while the repeated impacts or strokes, formerly necessary, rendered the heads of the rivets liable to give way in finishing, repeated hammering tending to crystallize the iron, and thus to destroy its tenacity, here the effect is produced by instantaneous pressure. The hemispherical form, too, is given to the rivet, and is preferable to the conical, both as regards strength and appearance. A large high-pressure boiler, furnishing steam for the machinery in motion, it is said, was made by this latter machine, and proved to stand 150 lb. per square inch.

A *striking*-looking machine, though not a *very* new one, is Ryder's patent forge for iron or steel, the strokes of its little hammers on its anvils being so rapidly reiterated, that the apparatus looks as if it were in a state of mere constant vibration. The anvils and hammers shipped while we saw it were adapted for rounding a bar of iron into something like a spindle. Red-hot iron was represented by cold lead, which rapidly assumed the form of a clean spindle four or five times the original length of the lead.

The steam travelling crane of Messrs. McNicol and Vernon, of Liverpool, may next be noticed, though it cannot be easily described without engravings. It consists of an elevated framework, with a sort of skeleton railway, supposed to run aloft along the course of a timber or stone yard, or other space where logs, stones, &c., require to be moved about. It has three motions, a hoisting, a longitudinal, and a transverse, each of which may be worked separately, or any two of them together. The machine is said to be able to load five tons, and shift it 100 feet in a direct line, in forty-five seconds. Ten thousand and twenty-five logs of Quebec timber are said to have been lately shifted in nineteen minutes twenty seconds by it at Liverpool, in presence of some members of the council and about thirty other gentlemen.

A somewhat ponderous congeries of pipes in this department is called The Fuel Economizer for Engines of 100 horse power, Green's patent. Its purpose is to convey heated water into the boilers at the boiling point, the feed water being heated by the spare heat from the boiler flues to boiling heat, and a considerable quantity of steam generated before it enters the boiler, thereby saving, it is said, one-third to one-fourth of the fuel. The apparatus can be applied to boilers of any description, stationary or marine.

A sea-water freshening machine, — Fell's patent,—is said to produce 200 gallons of fresh water a day from sea water. The principle of this invention, which has only been patented about two months, consists in keeping the water to be freshened below the boiling point, whereby its vapour is more easily managed, and more rapidly condensed and cooled than could be done by the usual process of distillation.

Machines for spinning, weaving, and printing cotton and flax, lace machines, and such like, form a very considerable portion of the whole exhibition of machines in motion. It is a most interesting sight to see these at work, and we cannot help remarking, that nothing more curious or beautiful can be seen in all the exhibition of machinery in motion than the many modes in which human actions are simulated, such as the whisk of the weaver's arm in the sudden hitch by which he sends the shuttle from side to side, or in the movement of the shoulder, elbow, wrist joint, knee, and foot, by which other familiar operations are performed. One ingenious little machine bristles an india-rubber band with carding-needles, bending, angling, and cutting every wire as it threads it on, in a way that looks really quite magical.

Amongst the lighter order of machines are those for making envelopes, which constitute centres of attraction for the visitors, as does a simple little apparatus into which pins go higlety-piglety, and come out all ready stuck in radii round a new sort of pin-paper, into which they "take their places" in a way that seems to astonish both "ladies and gentlemen." Round the ornamental pin-paper is the somewhat odd motto for so sharp and lancinating a little weapon—"Peace on earth and good will to men!" but such a seed, sown where it may be, can but do good.

One of the machine-made barrels, of good stout build, may be seen in this department: it is said to have been made in five minutes, by the patentee, Mr. W. Wild, of Salford.

We may here mention that Messrs. Clowes

and Spicer have a new edition of the catalogue just ready, which will doubtless be more useful than the first. Under great difficulties these gentlemen kept their word, and were ready on the opening day, not only with the shilling catalogue, but with the first part of their *Illustrated Edition*. The latter contains a description of the building by Mr. Digby Wyatt, and some other useful introductory matter.

NORTHUMBERLAND HOUSE, IN THE STRAND.

THE original Northumberland House was built in 1605, and Bernard Jansen and Gerard Christmas are supposed to have been the architects. According to a MS. note by Inigo Jones, in his copy of "Palladio," in Worcester College, Oxford,* the front was 162 feet in length, and the court 81 feet square. All that is old of the building we now see is the curious façade next the Strand, surmounted by the lion of the Percys. Along the front originally there was a border of capital letters instead of the present ugly parapet.

In the quiet court-yard, of plain Italian character, to which the handsome portal leads, it is difficult to believe that you stand in the throbbing heart of an excited city. The figure of Nelson, and the Lion, inscribed *Espérance en Dieu*, seen above the façade (an appropriate conjunction), alone enable you to recall the locality. At the back are grass, gravelled walks, and flourishing trees. The staircase is very handsome. It has a central flight of marble steps, and branches right and left; with richly worked *or-molu* railing and lamps, scagliola columns, and carved marble podium. The great feature of the house, however, is the Picture Gallery, an apartment of large size, richly (perhaps too richly) ornamented with groups in relief, eagles, boys, and foliage fully gilt, and containing a series of fine copies of Raffaelle's School of Athens, Marriage of Cupid and Psyche, and others. Amongst the pictures, with which the walls of the other rooms are covered, will be found choice specimens of the art of Titian, Vandyke, Salvator, Carravaggio, and others. Admission till now has been obtained with difficulty.

LIGHTNING CONDUCTORS.

IN your last week's number, in the account of the "Edinburgh Assembly Hall struck by Lightning," you observe that "the spire had no lightning conductor."

So frequently are these occurrences recorded, that one should imagine their cost to prohibit their employment; but from having for some years past attached those invented by Professor John Murray to many towers and spires, and witnessed their efficacy, I can assert that the cost has not in any case exceeded two shillings per lineal foot, including the gilt head and water-tank.

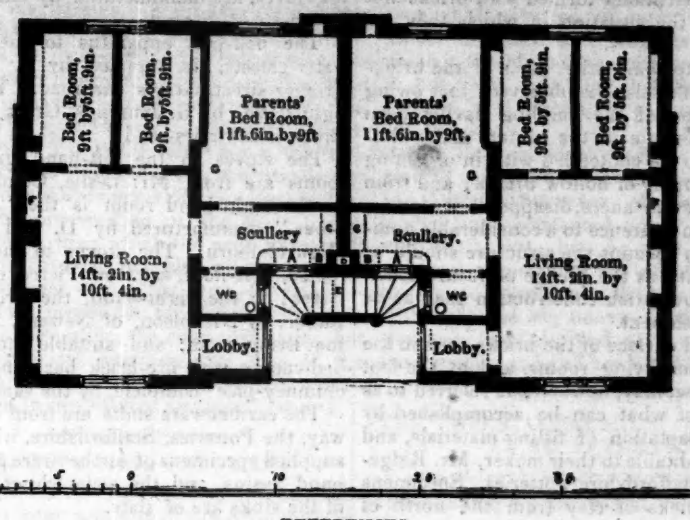
Whilst King Cross Church, at Halifax, was unfinished, and the conductor incomplete (the lower end being 20 feet from the ground), an electric discharge took place during a heavy thunder-storm, which passed down the conductor, and struck the ground at some short distance from it, without affecting the building. Scaffold-poles were at the time many feet above the level of the attracting point, and lead flashing within three feet of the conductor: the holders were of glass, secured by iron loops run with lead to the stone-work, the conductor being formed so as to admit of contraction and expansion.

With so efficacious and inexpensive a remedy (which you have frequently noticed heretofore), why need we have to record the destruction of buildings by almost every thunder-storm?—R. DENNIS CHANTRELL.

THE WARWICKSHIRE ARCHÆOLOGICAL and Natural History Society and the Northamptonshire Architectural Society will hold a public meeting at St. Mary's Hall, Coventry, on Wednesday, the 21st instant, when several papers will be read, and the various churches, &c., visited. On the following day an excursion will take place to examine the most interesting objects in the neighbourhood.

* Quoted in "Hand-Book for London."

PLAN OF MODEL HOUSES FOR FOUR FAMILIES.


Bed Room, 9ft. by 8ft. 9in.
Bed Room, 9ft. by 8ft. 9in.
Parents' Bed Room, 11ft. 6in. by 9ft.
Parents' Bed Room, 11ft. 6in. by 9ft.
Bed Room, 9ft. by 8ft. 9in.
Bed Room, 9ft. by 8ft. 9in.
Living Room, 14ft. 2in. by 10ft. 4in.
Scullery
Scullery.
Living Room, 14ft. 2in. by 10ft. 4in.
WC
WC
Lobby.
Lobby.
SCALE OF FEET.

REFERENCES.

A, Sink, with coal-box under.
B, Plate-rack, over entrance to dust-shaft, D.
C, Meat-safe, ventilated through hollow bricks.
E, Staircase of slate, with dust-place under.
F, Cupboard warmed from back of fire-place.
G, Linen closet in this recess, if required.

MODEL HOUSES FOR FOUR FAMILIES ERECTED AT THE CAVALRY BARRACKS, HYDE-PARK.

HIS Royal Highness Prince Albert, as President of the Society for Improving the Condition of the Labouring Classes, has had this building raised with a desire of conveying practical information calculated to promote the much needed improvement of the dwellings of the working classes, and also of stimulating visitors to the Great Exhibition whose position and circumstances may enable them, by the carrying out of similar undertakings, without pecuniary sacrifice, permanently to benefit those who are greatly dependent on others for their home and domestic comforts.

In its *general arrangement*, the building is adapted for the occupation of four families of the class of manufacturing and mechanical operatives, who usually reside in towns, or in their immediate vicinity; and as the value of land, which leads to the economising of space, by the placing of more than one family under the same roof, in some cases, renders the addition of a third, and even of a fourth, story desirable, the plan has been suited to such an arrangement without any other alteration than the requisite increase in the strength of the walls.

The most prominent peculiarity of the design is that of the receding and protected central open staircase, with the connecting gallery on the first floor, formed of slate, and sheltered from the weather by the continuation of the main roof, which also screens the entrances to the dwellings.

The four tenements are arranged on precisely the same plan, two on each floor.

The entrance is through a small lobby, lighted from the upper part of the door.

The living room has a superficial area of about 150 feet, with a closet on one side of the fireplace, to which warm air may be introduced from the back of the range: the corresponding recess may be fitted up with shelves; and on the opposite side of the room a shelf is carried above the doors, with a rail fixed between them.

The scullery is fitted up with a sink, beneath which is a coal-bin of slate: a plate-rack at one end, drained by a slate slab into the sink, covers the entrance to the dust-shaft, which is enclosed by a balanced self-acting iron door. The dust-shaft leads into a closed depository under the stairs, and has a ventilating flue, carried up above the roof. At one end of the scullery is an enclosure, forming a meat safe, ventilated through the hollow brickwork: shelves are fixed over the doors, and a dresser-flap against the partition wall.

The sleeping apartments, being three in number, provide for that separation which, with a family, is so essential to morality and decency. Each has its distinct access, and a window into the open air: two have fireplaces.

The children's bed-rooms contain 50 feet superficial each, and, opening out of the living room, an opportunity is afforded for the exercise of parental watchfulness, without the unwholesome crowding of the living room by its use as a sleeping apartment.

The parents' bed-room, with a superficial area of about 100 feet, is entered through the scullery—an arrangement in many respects preferable to a direct approach from the living room, particularly in case of sickness. The recess in this room provides a closet for linen; and a shelf is carried over the door, with a rail fixed beneath it—a provision which is made in each of the other bed-rooms.

The water-closet is fitted up with a Staffordshire glazed basin, which is complete without any wood fittings, and supplied with water from a slate cistern in common of 160 gallons, placed on the roof over the party and staircase walls. The same pipes which carry away the rain-water from the roof serve for the use of the closets.

CONSTRUCTIVE ARRANGEMENT.

The peculiarities of the building in this respect are, the exclusive use of hollow bricks for the walls and partitions (excepting the foundations, which are of ordinary brickwork), and the entire absence of timber in the floors and roof, which are formed with flat arches of hollow brickwork, rising from 8 to 9 inches, set in cement, and tied in by wrought-iron rods connected with cast-iron springers, which rest on the external walls, and bind the whole structure together: the building is thus rendered fire-proof, and much less liable to decay than those of ordinary construction. The roof arching, which is levelled with concrete, and covered with patent metallic lava, effectually secures the upper rooms from the liability to changes of temperature to which apartments next the roof are generally subject, and the transmission of sound, as well as the percolation of moisture, so common through ordinary floors, is effectually impeded by the hollow-brick arched floors.

The external and main internal walls are of patent bonded brickwork, which has the important advantages of securing dryness and warmth,* with economy of construction: another important benefit arising from the use of hollow bricks is, that where they are laid double, in parallel courses, without headers, as in the patent bonded brickwork, the internal face of the wall is sufficiently smooth to render plastering unnecessary. In the present instance, where plastering has been resorted

* Those who are conversant with the evils resulting from the absorption of moisture by common bricks, and the consequent loss of temperature in rooms by evaporation, will duly appreciate these advantages.

to it is confined to one side of a thin partition, or to partitions formed with bricks not intended for the situation in which they are used.

In regard to some other parts of the brickwork, it should also be observed, that owing to the erection of the building having been determined on late in the winter, many difficulties had to be contended with in obtaining a sufficient supply of hollow bricks; and from accidental circumstances, disappointments were experienced in reference to a considerable number, on which account the structure should be regarded rather as the pledge of future excellence in hollow brick construction than as its full accomplishment.

The glazed surface of the bricks used in the two upper floor living rooms, and at the foot of the staircase, may, however, be referred to as a specimen of what can be accomplished by the skilful adaptation of fitting materials, and as highly creditable to their maker, Mr. Ridgeway, of the Staffordshire Potteries. Specimens of glazed bricks of clay from the north of Devon are also exhibited.

The advantages afforded by the use of hollow bricks in securing an effective system of insensible *ventilation*, deserves particular notice. Fresh air is admitted from any suitable point of the exterior of the building to a chamber at the back of the living room fire-place, where being warmed, it may be conducted to any convenient place of exit above the level at which the fresh air is admitted. Vitiated air may be conveyed either into the chimney flue or to any other suitable place of exit through the upper wall courses, perforated for this purpose, beneath the springing of the arch, or through the arch bricks themselves. Suitable air-bricks and ventilators have been prepared with these express objects in view.

Internally French plaster has been used, as drying quicker, and having a harder surface than ordinary plaster. The floors, where not of Portland cement, are laid with Staffordshire tiles, excepting to the right-hand room, first-floor, which is of lava, by Orsi and Armani. The coping is in Portland cement. The external string courses and internal cornices are the patent bonded bricks set in Portland cement, with the splayed side outwards.

MATERIALS AND FITTINGS USED IN THE BUILDING, WITH ADDRESSES.

The unglazed hollow bricks have been chiefly made by Clayton's patent brick and tile machines, to which the prize of the Royal Agricultural Society of England was awarded in 1850. The process of manufacture may be seen at the Atlas Works, Upper Park-place, Dorset-square, where detailed particulars may be obtained.

The patent bonded facing bricks generally, and those used in the floors and roof, were made at Aylesford, near Maidstone; the red patent bonded internal bricks, at the Buxley works, near Esher, Surrey; and some of the partition bricks, at Mr. Cubitt's works, Pimlico.

The glazed bricks were made by the Ainslie machine, at Mr. Ridgeway's, the Potteries, Staffordshire. These being the first specimens, the actual cost at which they are likely to be hereafter supplied has not yet been ascertained.

The brick-work was executed by Mr. S. Grimsdell, Sun-street, Bishopsgate-street.

The metallic lava covering the roof, the floor lava, and the gravel lava to the front, were laid by Messrs. Orsi and Armani, Guildhall-chambers, Basinghall-street.

The French plaster and the Portland cement floors have been executed by Messrs. J. B. White and Sons, Millbank-street, Westminster.

The tile floors in the left-hand ground floor rooms are from Mr. Peak, Tunstall, Staffordshire, or Macclesfield-street South, City-road Basin. Those in the right-hand rooms are from Messrs. H. & R. Haywood, Burslem, Staffordshire, and South Wharf, Paddington.

The staining fluid used for the wood work is from Ibbotson's Varnish and Colour Works, Hammersmith.

All the traps used in the building are those of Lowe & Co., Salford; agents, Messrs. Kennard & Co., Upper Thames-street.

The metal window-lights, the ventilators, and all other articles of ironmongery, excepting the stoves, are manufactured by Hart & Sons, Wych-street, Strand.

The bell-pull apparatus to the left-hand water-closets, is supplied by J. W. Dann, Cromer-street, Gray's Inn-road. That to the right-hand, by G. Jennings, Great Charlotte-street, Blackfriars-road.

The stoves in the left-hand ground-floor rooms are from Mr. Leslie, Conduit-street; in the right-hand room is the "Cottager's Stove," manufactured by D. and E. Bailey, High Holborn. The stoves in the left-hand rooms, first-floor, are from Pierce, of Jermyn-street; to the right-hand, the Prize Cottage Range, by Nicholson, of Newark, is fitted in the living-room, and suitable stoves in the bed-rooms, with fire-brick back and cast-iron chimney-piece complete, by the same maker.

The earthenware sinks are from Mr. Ridgeway, the Potteries, Staffordshire, who has also supplied specimens of earthenware pipes, wash-hand basins, and the water-closet pans: two of the sinks are of slate.

The fittings, generally, are such as have been used in the model-houses built by the Society for Improving the Condition of the Labouring Classes; to which the architect of this building, Henry Roberts, F.S.A., also acted as honorary architect.

THE NEW PHILOSOPHY OF ARCHITECTURE.*

THE *Eclectic Review* for the present month has also an article on "The Stones of Venice," very similar in its tone to that in the *British Quarterly*, and in some respects even stronger, it being confidently asserted by the writer that the new philosophy will inevitably produce a thorough change both in theory and practice of architecture, and that too, in other countries as well as our own. Of what kind that change will be we are not informed, either by the writer of the book or his reviewers, for they leave it entirely to be imagined by their readers; and all that the uninitiated—be they even professional men—can conjecture is, that it will be ultra-revolutionary, and will put down almost all that is now in vogue, though what is to be substituted for it is not said—perhaps has not been yet considered.

The calmness with which reviewers prognosticate that we are on the eve of a complete revolution in all matters of architecture, has nothing in it very surprising; because, however great the changes may be which it will bring about, they will not affect them. With architects, on the contrary, the case is widely different: they will have to accommodate themselves to a new system of things,—to unlearn their present habits and tastes, as well as to acquire new ones,—and the task of *unlearning* is perhaps the most difficult,—at any rate, the most disagreeable one of all, if only because it is attended by the painful consciousness of having wasted time in studies which have merely fostered error and mistaken views. Whatever, therefore, the rising generation of architects, who have not yet entered upon their career, may do, the present one must earnestly deprecate the change we are told to expect; and most of all must those do so who have been most successful under the present system, because all that they have done will come to be regarded as evidence of the present degraded state of architecture, previously to its being enlightened by the touch of the new philosophy and the rays of the seven lamps or luminaries.

Yet, strange to say, notwithstanding that their interests are so nearly concerned, the architectural profession seems disposed to leave the matter to take its course, undisturbed by them, trusting, perhaps, to its dying away as suddenly as it came up. Still, it would be no more than common prudence in them to watch the opinions which obtain currency without the pale of their own body. However strongly they themselves may be opposed to them, it is possible that they may be forced upon them. Surely, then, it behoves architects, instead of sitting still with folded hands, to bestir themselves,—to prepare for, if they cannot avert, the revolution which they are told is about to break out upon them. Nor would it be difficult for them to attack and expose Mr. Ruskin's fanciful system and doctrines, which, as I now find, have been smartly handled in the *brochure* to which you referred.

Mr. Ruskin is altogether hostile to the "Great Exhibition" scheme—quite as much so as Colonel Sibthorpe himself, although not for exactly the same reasons. He is, undeniably, no friend to the alliance of art with manufactures; and "the mercantile value of art" must sound to him little better than a very profane phrase. How far those who extol him as a teacher go along with him in all antipathies, is not very clear, for they do not care to point out how greatly his peculiar doctrine runs counter to and clashes with the general taste, and many industrial interests also. The *Eclectic*, however, has ventured to remonstrate with him for his violent protest against the decoration of shop fronts and railway buildings. With regard to shops, what is to be regretted is, not that embellishment should be bestowed upon them, but that it should generally be in such bad taste, attention being given to mere showy vulgar display; and, so it be but striking, it matters not how preposterous it is. And that such is the case is all the more to be regretted, because shop fronts afford,—at least might be made to afford,—excellent opportunities for tentative essays in design and ornamentation; for even though failure should be as frequent as success, it would be comparatively of no consequence, nor could we get anything worse than we now have, even were we to get nothing better. No doubt, many in the profession would think it quite beneath them to design anything of the kind: the question is, whether, were they to undertake to do so, they would not find it *above* them, that is, above their power to show superior taste and *forte* in what throws them entirely upon their own resources of invention. ZETA.

* See p. 297, *ante*.

DINNER TO FOREIGN SCULPTORS.

ON 12th inst., the first of a series of interchanges of hospitality and good feeling in connection with the International Exhibition took place at Willis's Rooms, when the British artists met to welcome their brethren, the foreign sculptors, who have graced the exhibition with many fine works in their peculiar branch of art. Sir Charles Eastlake took the chair. Appropriate toasts were given and responded to, by Herr Lefrew, the Prussian commissioner; Herr Kiss, M. du Seigneur, Signor Monti, Signor Bezzi, Mr. Scott Russell, Sir Charles Eastlake, Mr. M'Dowall, and others.

We are not certain that this friendly demonstration was quite so well managed as it might have been. Many more persons would have co-operated if it had not been so hurried.

"A Sculptor" writes us as follows:—

"Permit me to say a few words on the subject, and the reasons which prevented some brethren of the craft from joining the festival. When first proposed, I hailed with delight the prospect of unity among sculptors, who, from various reasons, are, as a body, less united than many others,—each groping his own way, as it were, unassisted and unadvised. Seeing the word "*festival*" at the head of the invitation, there immediately occurred to me the glorious "Ponti Moli" annual festivals at Rome,—a sort of carnival pic-nic,—when the artists of all nations join in a festive day, without the Eternal City,—memorable on more than one occasion; and also my mind reverted to the festival given to Cornelius at Munich, on his return from Rome, when two to three hundred honoured that great artist by an entertainment a few miles from Munich, where, under refreshing shades, "the Isor rolling rapidly," the song, the toast, the simple cheer, went round,—in the presence, too, of the king, who came out to witness the pleasing event. Remembering likewise the simple manners of our guests, it struck me that a similar festival might be adopted for the present occasion, when, from the over-crowded state of the vast metropolis, and the delightful advent of spring, an escape a few short miles from town, say to Hampton

Court, Virginia Gardens, or Windsor; and an afternoon of intellectual feasting on the works of art and nature, at either place, might have been brought to a close by an entertainment obtainable, I conceive, at a much more moderate cost than a London dinner and wine, railway included. Finding, however, that it was not entertained, and that a thorough London close-penned up aldermanic wine and dinner was decided to be, greatly fearing the results to health and comfort, I had the courage with some few others to decline the proposition."

NOTES IN THE PROVINCES.

IT is proposed to erect public baths and washhouses at Grantham at a cost of 800*l*.——At Lyme Regis a discovery of an ancient piece of stone architecture has lately been made in a house partially destroyed by fire a few months ago. It consists of a chimney-piece, of Ham-hill stone, with Norman mouldings: length, 8 feet 4 inches; extreme width, 2 feet 11 inches; thickness, 8 inches, standing on jambs 4 feet 2 inches high, 2 feet 2 inches wide and 8 inches thick; the weight of the whole chimney-piece being more than two tons. It was an arched fire-place, and the whole of this ancient piece of workmanship had been hid in contracting the aperture, the chimney-piece having been battened over, canvassed, and papered.——In the council at Worcester, last week, the mayor stated that the Treasury had decided on making a grant of 150*l*. a-year towards the school of design to be established there, besides some casts, books, &c.——The infant-school buildings at Studley were opened on Wednesday, in week before last.——Messrs. Dickson and Mackenzie, of Wellington, have obtained the contract for erecting new gas works for that town. There were several tenders, but that of Messrs. Dickson and Co. was the lowest, namely, 2,000*l*. The works are to be commenced forthwith, so as to be completed for lighting the town next autumn. The site is at no great distance from Mr Edwards's present gas works. The first stone has already been laid.——On Monday, in last week, the foundation-stone of the new Grammar-school at Lancaster was laid. The architect is Mr. Paley.——The Rodderup Fell Mining Company, at Leadgate, Alston, have erected spacious school buildings, which were opened on 1st inst. The buildings consist of a school-room capable of accommodating from 100 to 120 children, and a master's house.——The restoration of Sir John Barrow's monument, which was struck by lightning in January last, is now nearly completed at a cost of 120*l*., to be repaid by an entrance-fee to the tower and temple.——At the East Prince's-street Gardens, Edinburgh, operations are busily progressing. The stairs on each side of the Scott Monument to the south, which conduct to the road on the slopes, are nearly completed. A hall has just been built for the Philosophical Institution there at the back of their present premises in Queen-street, intended to serve as a reading-room and library. The apartment is seventy feet in length by thirty in width, and forty in height. It has an imitation oak roof, and is surrounded by a light gallery, supported by iron pillars. Light is supplied from the roof and large windows in the south end of the hall. The arrangements have been all carried out under the eye of Mr. Bryce, the architect, seconded in the mechanical part of the works by the builders, Messrs. Goodall and Sanderson.——There is now said to have been something "mysterious" in the fire at the Assembly-hall attributed to lightning. That the hall was struck by the electric force appears to be admitted, but one paper insists "that the fire in the hall preceded the lightning," and a correspondent suggests "that the fire may have been the proximate cause of the explosion of the thunder cloud, and that the current of heated air passing up the rain conducting pipe may have formed a railway for the lightning."——A new arcade is about to be built at Glasgow in a line with London-street, and confronting a new terrace in Bothwell-street, at Waterloo-street, just erected on a design by Mr. Kirkland, architect, of the Corinthian order of architecture, for Mr. James Scott, one of the Glasgow magistrates.——Sir Michael R. Shaw Stewart has presented to the town council of Greenock, as representing the community, the valuable piece of ground, in the neighbourhood of the ancient mansion-house, known as Well Park. The ground is a perfect level, extending to about five acres, and has a fine soil. The conditions which Sir Michael attaches to the gift are enhancements of its value, as they include the preservation of the trees, and of the Old Well, from which the park derives its name. Sir Michael has also offered a large field in the east end of the town, for an experiment in the meantime, but if successful, as a free gift to the public, the condition being that the younger and operative branches of the community show a wish to enjoy themselves on the spot in out-of-door and manly sports.

PROFESSIONAL PRACTICE.

MUCH has been said of late through the medium of your columns of the non-appreciation of the time and labour of architects by the public at large, and many complaints made of the paltry sums offered by art-patronising individuals for the remuneration of competing architects; but surely if they do not know their own dignity and the dignity of their profession, it is not so much to be wondered at that building committees should not appreciate the unremitting study or ingenuity of an architect, or offer a premium which they would not consider too much for a donation to one of their servants who had done them any little extra service.

The following advertisement appeared in the *Manchester Guardian* of last Saturday:—

"To Parties about to Build.—An Architect will undertake the Design, Estimate, and Superintendence of any Class of Building at the *lowest!* per centage."

Now, Sir, whilst such things as this occur, I fear it will be useless for those devoted to the interests of the profession to attempt to give the public at large an adequate idea of the responsibility or duty of an architect, nor will any committee give to him that respect which is due to him as a member of the most important branch of the Fine Arts.

OBSERVER.

PROJECTING EAVES OF COTTAGE ROOFS.

METROPOLITAN BUILDINGS ACT.

KNOWING you and all your London readers will be interested in a decision given by the official referees on Monday the 5th inst. I send you the particulars.

I have just built and covered in two semi-detached villas, at the Mount Eliot Estate, Lee Bridge, Blackheath. On the first house I had match-boarded the soffit of the projecting part of the roof, and screwed on an O G iron gutter, on the ends of the rafters over a deal fascia. This was objected to by Mr. Collis, the district surveyor, and in the next house, according to his direction, I substituted laths and cement. I may as well say here, the first house, in wood, cost 5*l*. 12*s*.; the last, in lath and cement, 3*l*. 11*s*.; so by adopting the very letter of the Buildings Act, I saved more than one-third. However, Mr. Collis felt himself bound to take me before the referees, and the case being called, I will state, as nearly as I can, what took place. When we were seated one of the referees addressed Mr. Collis in these words: "Mr. Collis, we understand, from very high authority, that a *wooden cornice, or soffit*, to a roof not hanging over the public way, is not contrary to the Act." Mr. Collis, who appeared completely astounded at this statement, said, "It is contrary to the wording of the Act." The referee: "Well, we understand not, and hope you will not bring any more such cases before us." Another referee, "Surely Mr. Collis does not wish to press this case, after what he has heard." Mr. Collis said, he did not, but still considered it "contrary to the Act." Mr. Collis declining to proceed, I addressed the referees thus: "Gentlemen, I thank you for the lenient decision you have come to in this case, and sincerely wish the Act had, in many other instances, been carried out in its true spirit, instead of insisting on its very letter. If such had been the case, I feel assured it would not have received the opposition it has done from the building branches in London." I enclose the papers as a guarantee of correctness. N.

*** This decision confirms Mr. Godwin's view of the question in the case "Delay and the District Surveyor of Kensington," reported and commented on in the BUILDER, vol. viii. p. 601, but on that occasion pronounced *against* by the referees, and we, in justice to ourselves, draw attention to it. Although the arguments used on that occasion were not admitted at the moment, they have germinated and produced fruit.

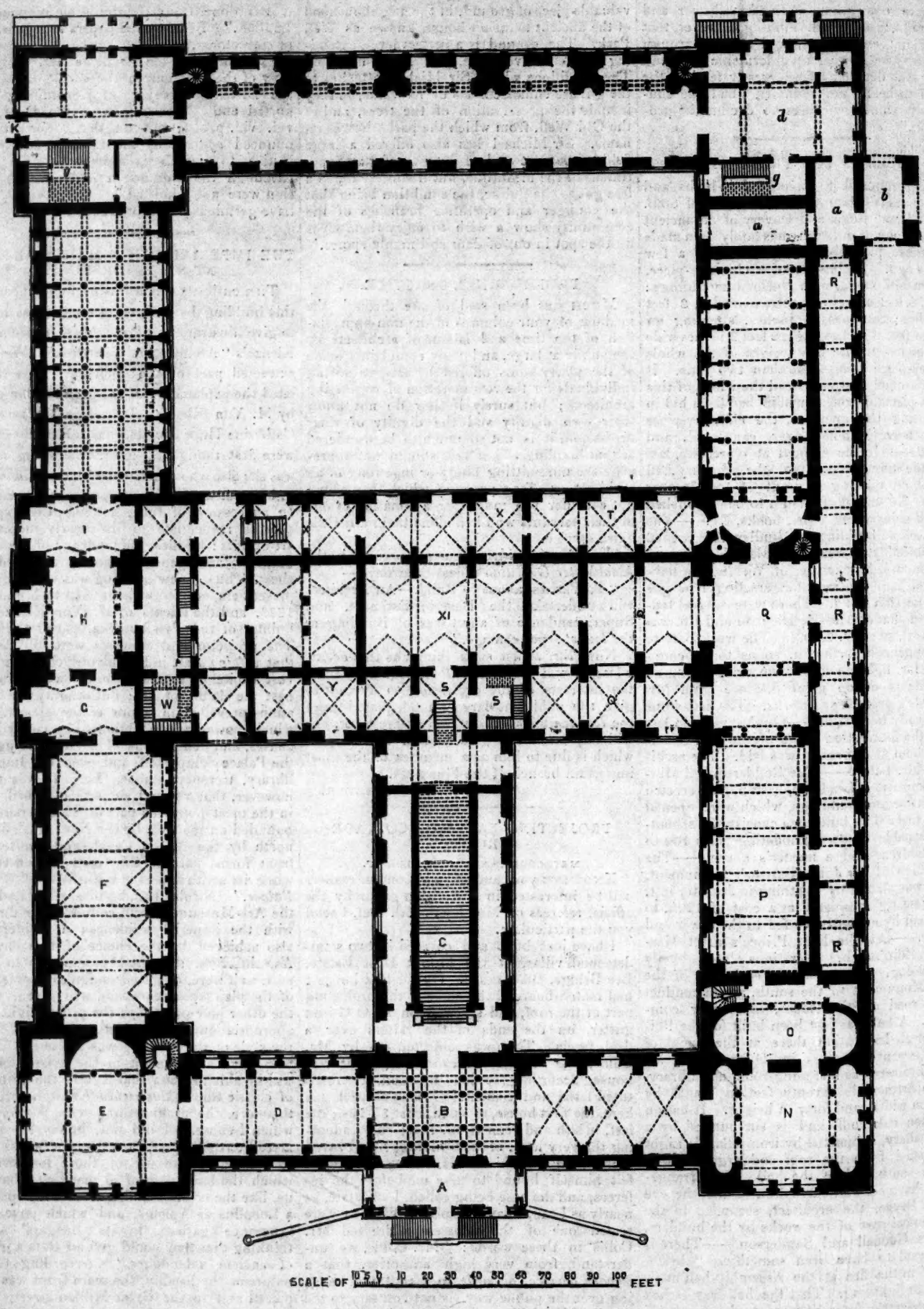
THE IMPERIAL MUSEUM OF FINE ARTS AT ST. PETERSBURG.

THE curiosity which was excited concerning this building by our recent notice, has led us to give illustrations of the Museum from Mr. Klenze's "Architectural Sketches." We have extracted part of the report, and have translated the explanation of the ground-plan given by M. Von Klenze. It was in the reign of Catherine II. of Russia, that collections of art were first thought of in St. Petersburg, and it was she also who caused the so-called *Eremitage* to be erected for their proper accommodation. In succession of time, however, these spaces became inadequate to the yearly increasing art-objects: besides, the tendency of the times outgrew arrangements mostly intended for show. Thus, a new building was willed by the present emperor, to which a visit to Munich in 1838, and the talents of M. Von Klenze, the builder of the Pynakotheka, paved the way. The projector and architect were fully aware, that a *fair* space, independently chosen in the vast capital of Russia, would have answered best the claims of art; but weighty considerations prevailed in favour of the present site, which, however, was obtained by costly purchases, and demolitions of such buildings as the Palace Schippeloff, and even the imperial library, treasury, stables, &c. It was thus, however, that a grand site was obtained, even in the most populous part of St. Petersburgh, bounded on the west by the Neva Quai, on the north by the Moika Canal, and whose east front forms part of the Great Million-street, while its south aspect is towards the "*Winter Palace*." Nicolas had, besides, stipulated that the Art-Museum should communicate directly with the imperial residence; a desideratum also achieved by the choice of this locality. As, therefore, the Art-Museum was to form part, as it were, of the sovereign's *demesne*, part of the plan (the decorative), was given, while the other pole pointed to the proper light and appropriation of the objects exhibited. "As the style of the building was left to *me*, those, who have any insight in the essence of art, will be able to know that it was the principle of classic times (*klassischen Kunstzeiten*), and, therefore, the architectural style, Κατ' ἐξοχην, which I chose. I did not, however, confine myself to that—pitiful to say,—*obtuse* imitation and inappropriate use of those few forms—which the barbarism of so many ages has left us, like the crumbs falling from the repast of a Lucullus or Apicius, and which poverty or ignorance gathers in its beggars' sacks, thinking that they could give us thus a glance of ancient splendours." According to the nature of the locality, the main front was to be placed east in the Great Million-street, quite appropriate, as its breadth here is 90 or 100 feet. The finest aspect, surely, is that towards the west, commanding the splendid quay and river of the Neva, and the plan has also been extended to this; but as this site is yet occupied by a building containing the greatest part of the Picture Gallery, they will have to be first removed to their place in the New Museum.

Our view shows *half* the elevation next the Canal. We shall give plan of the upper story and an interior view on another occasion.

IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.

PLAN OF GROUND FLOOR.



REFERENCES.

A, forms the access from the street called the Great Million: it is formed by eight pilasters, on which are ten Telamones, made from the fine grey granite of Sendabal. Their height, conjointly with the pedestal, is 22 feet. This entrance leads to

The vestibule, B, whose ceiling is supported by sixteen columns of red granite, from Finland.

C, is the principal staircase, whose steps of Carara marble have a width of 22 feet, and conduct to the first story.

D and E, are the spaces for the exhibition of the antique marble works.

F, a gallery for modern sculpture.

G, the workroom of the director of the marble department.

H, saloon for the antiquities of all kinds.

J, collection of antique vases and sepulchral monuments.

K, room of the director.

M, N, O, P, Q, R, Library of art and costly works.

S, S, Stairs and passage to the underground warming apparatus.

Y, Room for the illuminated MSS.

X, Ante-room, and

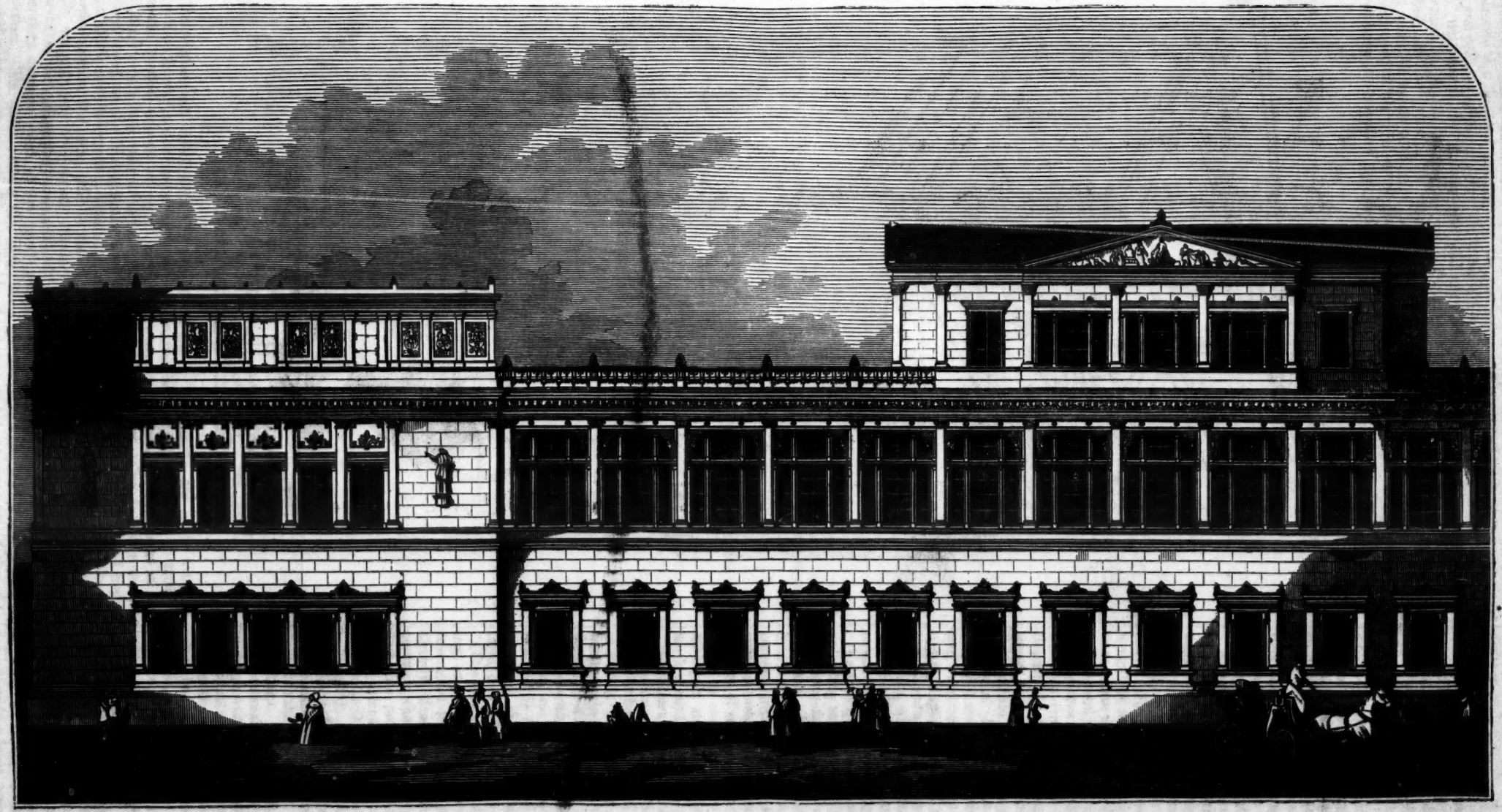
X X, Room for the antiquities which have been found in Kertsch, the ancient Pantikopæum, and which are intended to form an especial department of the collection.

T, Collection of engravings.

T 1, Collection of drawings.

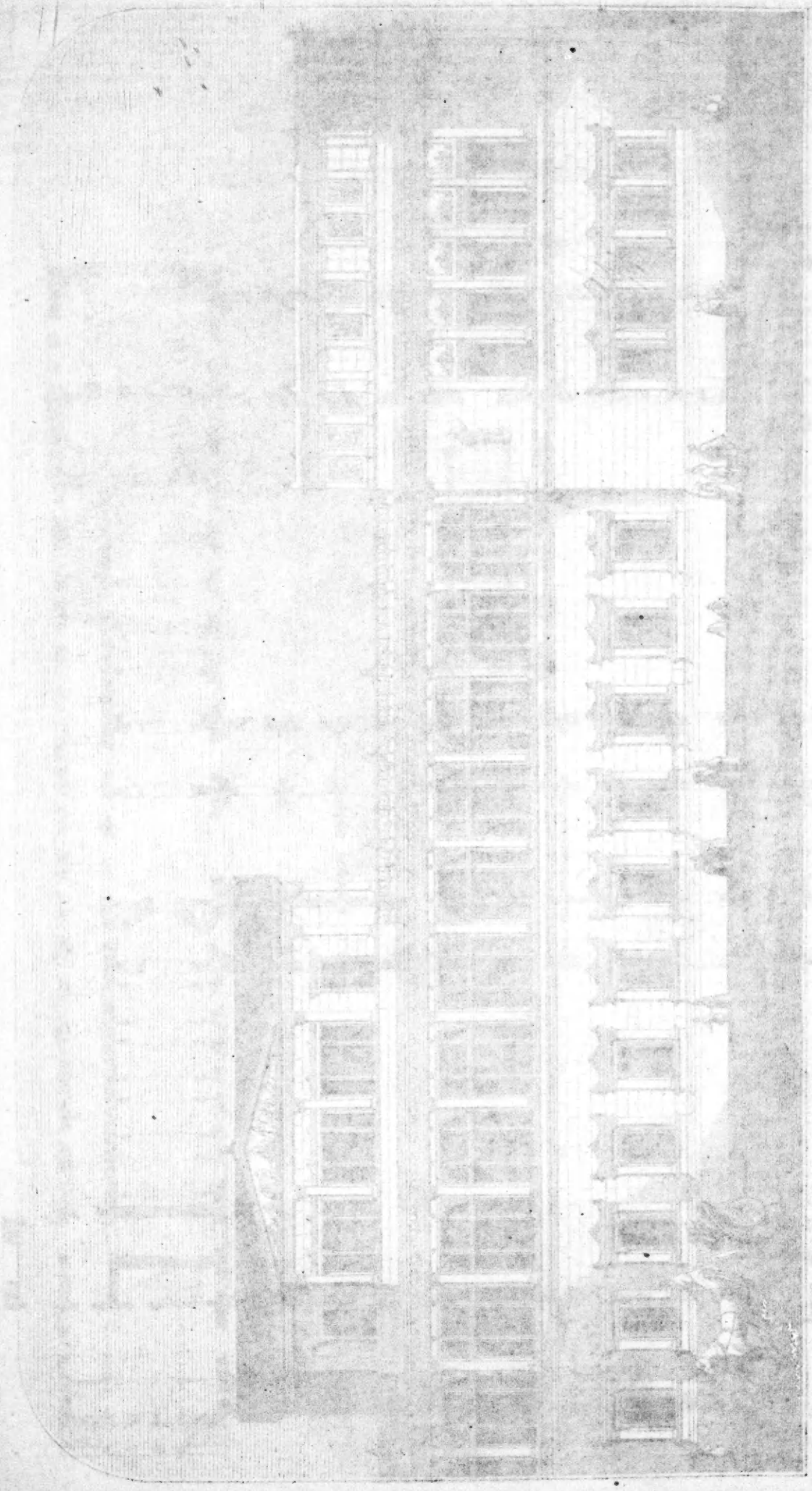
W, Staircase for the service of the establishment.

a b g, Spaces not yet completed: intended for collections of Russian (Slavian) antiquities.



IMPERIAL MUSEUM OF FINE ARTS, ST. PETERSBURG.

MONSIEUR LEO VON KLENZE, ARCHITECT.



MACHINES FOR WORKING AND POLISHING MARBLE.*

LARGE slabs of marble and stone are ground very accurately in a machine patented by Mr. Tulloch, and called a grinding bed. In this machine, represented in fig. 9, the slab to be ground is placed horizontally upon a moving bed, and the grinding is effected by sand and water, by means of a large flat plate of iron resting upon the surface of the slab. The two surfaces are traversed over each other with a compound motion, partly eccentric and partly rectilinear, so as continually to change their relative positions. The machine consists of a frame about 9 feet long, 6 feet wide, and 8 feet high: about 2 feet from the ground is mounted a platform that is very slowly reciprocated horizontally for a distance of from 1 to 2 feet, according to the size of the slab, by means of a rack and pinion placed beneath, and worked alternately in both directions.

FIG. 9.

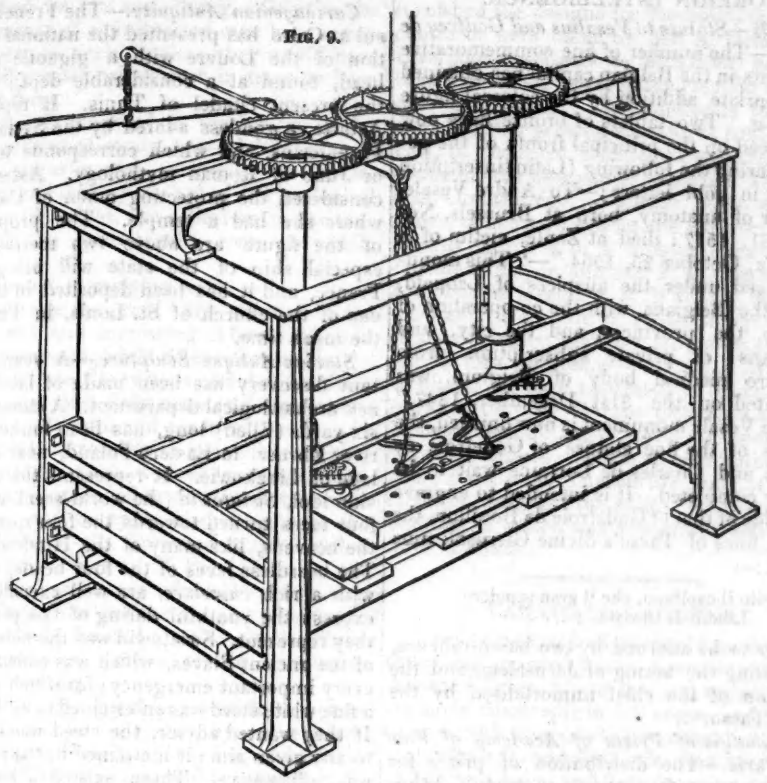


FIG. 10. FIG. 11. FIG. 12.

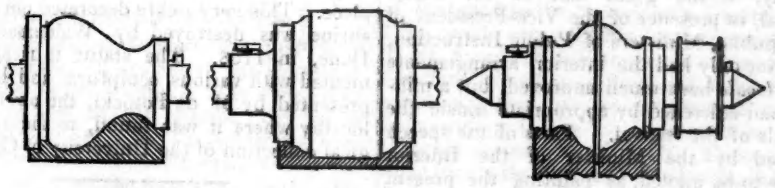
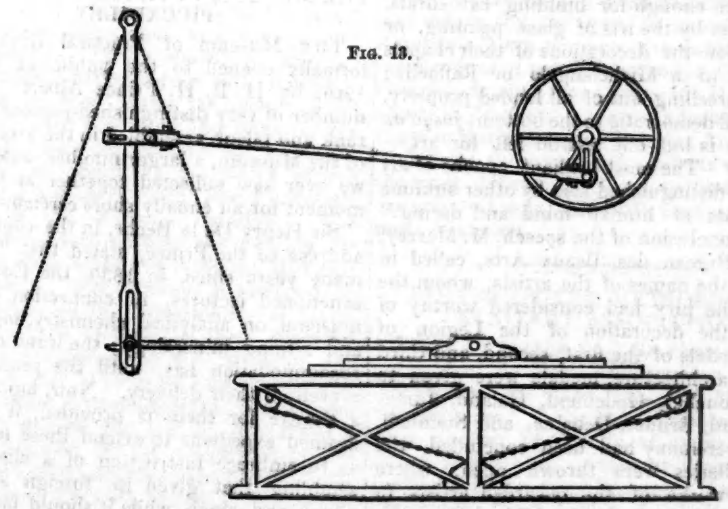


FIG. 13.



Above the platform are fixed vertically two revolving shafts, having at their upper extremities horizontal toothed wheels of equal diameter which are driven by means of a central toothed wheel keyed on the driving shaft. The two vertical shafts are thus made to revolve at equal velocity or turn for turn, and to their lower ends are attached two equal cranks placed parallel to each other, the extremities of which therefore describe equal circles in the same direction. To these cranks the iron grinding plate or runner is connected by pivots fitting two sockets placed upon the central line of the plate. The cranks are made with radial grooves, so that the pivots can be fixed by wedges at any distance from the centre of the cranks. When the machine is put in motion the grinding plate is thus swung round bodily in a horizontal circle of the same diameter as the throw of the cranks, which is usually about 12 inches, and consequently every portion of the surface of the grinding plate would describe a circle upon the surface of the slab being ground if the latter were stationary. But by the slow rectilinear movement of the platform the slab is continually shifted beneath the plate so as to place the circles, or rather the cycloids, in a different position, and it is only after many revolutions of the cranks that the same points of the surfaces of the grinding plate and slab are a second time brought in contact.

The grinding plate is raised for the admission of the slab by means of four chains suspended from a double lever, and attached to the arms of a cross secured to the centre of the upper surface of the plate, which is thus lifted almost like a scale pan. For slabs that are much thicker or thinner than usual, the principal adjustment is obtained by the removal or addition of separate beds, or loose boards, laid upon the platform to support the slab at the proper height. Slabs that are too large to be ground over the whole surface at the one operation, are shifted once or twice during the grinding, to expose the surface equally to the action of the grinding plate.

The necessary pressure for grinding is given by the weight of the horizontal plate, which is supported almost entirely by the work, as the pivots of the cranks merely enter the sockets, and allow the plate to descend when left to itself. For delicate works a counterpoise weight is attached to the double lever, so as to regulate the pressure on the work.

The sand and water are applied to the grinding surfaces in much the same manner as in the iron runners used by hand previously described. The grinding plate is made on the upper side with a raised rim like a tray, and the bottom of the tray is perforated with numerous holes about 1¼ inch diameter, arranged at equal distances apart. The sand and water are thrown into the tray at intervals in small quantities, and run through the holes and between the surfaces of the slab and grinding plate, which are thus uniformly supplied with the feed that ultimately makes its escape round the edges of the grinding plate.

Various qualities of sand may be employed according to the perfection of surface required, and very flat surfaces are produced by this machine. The grounding or smoothing of the best works is effected with a succession of fine emeries, with which the surfaces may be made very smooth, and almost polished; but from motives of economy, the grounding of ordinary works is more frequently completed by hand, with grit stones and snake stone before the work is finally polished on another machine.

Rectilinear mouldings in marble are wrought by machinery in a manner altogether different from the hand process of working mouldings, in which, as previously described, nearly the whole of the material is removed with chipping chisels, and the surfaces of the mouldings are only smoothed by abrasion. In the machine process, on the contrary, the whole of the material is removed with revolving grinders, by which the work is reduced to the required form, and left smooth at the one operation.

The machine for working rectilinear moulding, or as it is called *the moulding bed*, closely resembles in its construction a ripping bed already described, except that the frame carrying the revolving grinders is provided with the power of vertical adjustment by a screw placed beneath, in order to raise the grinder to the proper height to suit the thickness of the marble, and that instead of the grinders being thin circular sheets of iron, they consist of solid cylinders of cast iron turned to the counterpart forms of the required mouldings. Indeed, the ordinary ripping bed is occasionally used for working mouldings on large works, and when it is provided with the vertical adjustment for elevating or depressing the axis to any required position, the ripping bed is equally suitable for working mouldings; but as the latter are in general only required on slips of marble only a few inches wide, a narrow machine is usually employed for the purpose.

The forms of some of the grinders are shown in figs. 10, 11, and 12: the outline represents the grinder, and the shaded part beneath, the entire compound moulding that would be produced by the same. A separate grinder is required for every different moulding, and consequently a large number of grinders have to be provided to meet the demand for variety. They are all pierced with a central hole fitted to the axis of the machine into which they are

* Concluded from p. 303. From Holtzapffel's "Turning and Mechanical Manipulation."

o be employed, and secured either by a wedge or a side screw, so that they admit of being readily exchanged when a different form of moulding is required.

The grinder of suitable form having been selected it is fixed on the axis of the machine: the slip of marble is cemented with plaster of Paris upon the bed; and the frame carrying the spindle is adjusted by the screws beneath to the proper position, to allow the grinders to penetrate the marble to the required depth for the production of the moulding. As in the ripping bed, the grinder is made to revolve so as to cut upwards towards the surface, and the attendant keeps a small heap of moist sand constantly in contact with the face of the grinder. The weight attached to the sliding bed by a line passing over a pulley keeps the work constantly advancing in a straight line towards the grinder as fast as it is cut, and the work finally presents a compound rectilinear moulding of exactly the counterpart form of the grinder. Mouldings on the edges of narrow slips are sometimes wrought in pairs, as in fig. 12, the two pieces being cemented together sideways as one block, and which is placed edgeways upon the machine.

Circular mouldings in marble such as the base of a column, a vase, or similar object, are generally wrought by turning in a lathe. Small flat circular mouldings, such as are sometimes seen in the corners of chimney-pieces, are ground to their forms by machinery, in much the same general manner as the rectilinear mouldings, but the machine already described for cutting out small circles of marble, is employed for grinding the small circular patterns.

The grinders are made of cast-iron turned to the counterpart form of the pattern, as shown in section in fig. 5, and screwed upon the upright spindle of the machine the same as the circular cutters. The counterpart grinders are kept supplied with moist sand, and the grinding is continued until the circular pattern is entirely developed: the works are afterwards polished in the lathe.

The polishing of rectilinear works in marble, by machinery, closely resembles the polishing of flat slabs by hand, previously described, the chief differences being, that for large slabs, from two to six rubbers or blocks are employed, and that they are reciprocated by the machine instead of by the hand. The slab of marble to be polished, is laid upon a flat bench or table about 12 feet long and 6 feet wide. At a moderate height above the bench is fixed a crank driven by the engine, a connecting rod from which leads to an iron swing frame, working as a pendulum placed 2 or 3 feet from the end. Fig. 13 represents the side view of the polishing bed: the swing frame consists simply of two rods moving upon centres above, and carrying near their lower extremities a horizontal bar extending the entire width of the bench: to this bar as many separate iron rods are attached as there are rubbers to be employed at one time, and every rod is jointed to its own rubber, which, for flat surfaces, consists of a block of wood about 2 feet long and 6 inches wide, covered with thick felt. The attachments of the connecting rods to the crank and pendulum are all capable of adjustment, so that the length of stroke can be readily changed to suit the size of the work in course of being polished, but generally the stroke is about 3 feet long.

The rubbers are used with the succession of powders, and the weight of the blocks and rods supply the pressure. Several narrow rubbers are used instead of one wide rubber, in order to allow each rubber to adapt itself readily to any trifling irregularities in the surface of the slab. The rubbers are shifted across the width of the slab, by sliding them to another position on the horizontal bar of the pendulum frame, and the platform of the machine is traversed endways by a chain and drum, or a rack and pinion, to expose the work equally to the action of the rubbers.

Rectilinear mouldings are polished in the same manner, except that elastic rubbers are employed. These are made of coarse cloth, like sacking: generally old sugar bags are used for the purpose: they are cut into strips about 6 inches wide, folded lengthways, and nailed through the middle of the fold close together to a block of wood, so as to present when complete a surface 8 or 9 inches wide, composed of the edges of the cloth, the loose filaments of which penetrate into the angles of the mouldings. For polishing the edges of narrow works in marble several pieces are fixed close together edgeways in a wooden trough, and they are all polished at the same time."

FOREIGN INTELLIGENCE.

Brussels—Statues to Vesalius and Godfrey de Bouillon.—The number of fine commemorative monuments in the Belgian capital has obtained an appropriate addition by the colossal figure of Vesalius. Two tablets of bronze have now been placed on the principal fronts of the pedestal, bearing the following (Latin) inscription engraved in gold letters:—To André Vésale, the father of anatomy, born at Brussels, November 31, 1517; died at Zante, victim of a shipwreck, October 25, 1564."—"This monument, raised under the auspices of Leopold, King of the Belgians, with the co-operation of the state, the provinces, and the city, and by means of private subscription from the entire medical body of Belgium, was inaugurated on the 31st December, 1847."

As the Vesale monument is now finished, the pedestals of the fine statues of Godefroie de Bouillon and Charles de Lorraine wait to be similarly completed. It is intended to engrave on one side of that of Godefroie de Bouillon, the two first lines of Tasso's divine Gierusalemme Liberata:—

"Canto il capitano, che il gran sepolcro
Liberò di Christo. . . . ."

It is also to be adorned by two basso-relievos, representing the taking of Jerusalem, and the coronation of the chief immortalised by the lines of Tasso.

Distribution of Prizes of Academy of Fine Arts, Paris.—The distribution of prizes for the best works of painting, engraving, lithography, and architecture, took place on the 3rd of May, in the great hall of the Palais National, in presence of the Vice-President of the Republic, Ministers of Public Instruction, &c. Not only had the interior arrangements of the *locale* been much improved, but a military band enlivened by appropriate music the intervals of the festival. Parts of the speech delivered by the Minister of the Interior deserve to be quoted, as painting the present position of art in France. "The clergy are no more rich enough for building cathedrals, to light them by the iris of glass painting, or to employ for the decorations of their chapels the minds of a Michelangelo or Raffaelle; with the parcelling out of all landed property, and on a soil democratic to the bottom (*jusqu'au tuf*), there is but one patron left for art,—the *nation*.* The most brilliant epochs of art were those distinguished also by other sublime achievements of human mind and daring." After the conclusion of the speech, M. Mercey, Chef du Bureau des Beaux Arts, called in succession the names of the artists, whom the votes of the jury had considered worthy of reward,—the decoration of the Legion of Honour, medals of the first, second, and third class. In architecture, medals were given to Messrs. Bouchet, Godebœuf, Galand, Jumeline, Héraud, Brunet, Debaine, and Steinheil. After the ceremony had been concluded, the lower galleries were thrown open, where only the works of the rewarded artists (a creditable *selection*) were exhibited to public sight.

Archæological Society of Rome, April 26.—This day is considered the anniversary of the foundation of Rome(!), on which, also, the above Society celebrates that of her establishment. Dr. *Braun*, the secretary, spoke first on the progress of publications of last year, especially the plan of the Via Appia, which will appear successively as the excavations undertaken thereon progress. The recent excavations also at the Forum, the Tabellarium, the Basilica Ulpia, the Palatine, and the church of St. Nicola-in-carcere, have yielded valuable information on ancient Rome. After a few words of condolence which were devoted to the loss of the late amiable Marquis of Northampton, a bronze discus from Egypt was exhibited. It is adorned with a relievo representing the head of Mercurius, under which a cock sits on the rudder of a ship, in the act of devouring a scorpion. Padre Sachi then read an Essay "On the famous Pompeii Mosaic, representing a battle of Alexander the Great." The Padre stated his reasons for believing that this picture represents the battle of Arbela.

Carthagenian Antiquity.—The French consul at Cairo has presented the national collection of the Louvre with a gigantic marble head, found at a considerable depth within the present citadel of Tunis. It represents Astarte, a goddess adored by the Syrians and Phœnicians, and which corresponds to Luna or Juno of Roman mythology. Astarte was considered the protecting omen of Carthage, where she had a temple. The proportions of the figure are above two metres. An especial ship of the state will bring it to France, and it has been deposited in the garden of the church of St. Louis, in Tunis, in the mean time.

Slavian Antique Sculpture.—A very important discovery has been made of late in this *new* archæological department. A stone statue, six yards (Ellen) long, has been found in the river Zbrusz, in Eastern Poland, near the village of Linzkowie. It represents the old Slavian idol, *Swiatowid* (the world-seer), who has four faces turned towards the four quarters of the heavens, like many of the Hindoo deities. The beardless faces of the four heads, covered with a rich *chevelure*, are well executed, and express the youthful daring of the personage they represent. Swiatowid was the chief oracle of the ancient Slaves, which was consulted on every important emergency; for which purpose a fine white steed was entertained in his honour. If they wanted advice, the steed was let loose to any given aim; if it attained it, the response was affirmative. There existed a renowned temple in honour of Swiatowid in the isle of Rügen (Baltic), whereto a vast pilgrimage took place. This very richly decorated old national shrine was destroyed by Waldemar I., the Dane, in 1168. The statue is richly ornamented with various sculpture, and has been presented by M. de Potocki, the owner of the locality where it was found, to the archæological collection of the University of Cracow.

* The sale of art-works of this year's exhibition has been one of the worst on record.

THE MUSEUM OF PRACTICAL GEOLOGY, PICCADILLY.

The Museum of Practical Geology was formally opened to the public on Monday, 12th, by H. R. H. Prince Albert. A large number of very distinguished persons, both in rank and talent, assembled in the great gallery of the Museum, a larger number, indeed, than we ever saw collected together at the same moment for an equally short ceremonial.

Sir Henry De la Beche, in the course of an address to the Prince, stated that "Though many years since, in 1839, the Government sanctioned lectures, in connection with the museum, on analytical chemistry, metallurgy, and mining mineralogy; the want of proper accommodation has, until the present time, prevented their delivery. Now, however, that a theatre for them is provided, it has been deemed expedient to extend these lectures so as to embrace instruction of a character resembling that given in foreign schools of mines, and which, while it should be adjusted to the wants of this country, should also have reference to the mineral wealth of the empire at large. Several memorials from important mining districts have been presented to the Government to afford facilities at this establishment for instruction available for the mining interest—one of so much magnitude in this country—the value of the mineral products of Great Britain and Ireland being now estimated at about 25,000,000*l.* per annum, taking the various products as nearly as possible in their first state. It has been further estimated by competent foreign writers that the annual value of the mineral substances raised in the British islands is equal to about

four-ninths of that of all Europe, including these islands.

To your Royal Highness it would be needless to point out the bearings of the mining schools of France, Saxony, Russia, and Austria, upon the mineral resources of those countries—the useless expenditure they prevent, and the real productiveness they promote. To those intimately acquainted with the mining districts it is a matter of deep regret to find many a powerful mind struggling with a want of knowledge of what others have accomplished or are now doing. Great as the achievements of uninstructed men have sometimes been in such districts, they would have been still greater had correct instruction been afforded them.

While it is proposed to receive pupils for regular courses of study, to teach by means of lectures, experimental researches in the laboratory, and also by the aid of the geological survey in the field, the collection in the museum will be gratuitously open to public view."

The Prince, in replying, said:—

"I rejoice in the proof thus afforded of the general and still increasing interest taken in scientific pursuits; while Science herself, by the subdivision into the various and distinct fields of her study, aims daily more and more at the attainment of useful and practical results. In this view it is impossible to estimate too highly the advantages to be derived from an institution like this, intended to direct the researches of science, and to apply their results to the development of the immense mineral riches granted by the bounty of Providence to our isles and their numerous colonial dependencies. It will always give me the greatest pleasure to hear of, and, as far as I am able, to contribute to the continued success of the Museum of Practical Geology."

The collections are alike scientific and practical, and should be visited by our readers. The laboratory has been fitted up under the direction of Dr. Playfair, and is thought to be the most complete in the country.*

CHURCH-BUILDING NEWS.

A large painted window has just been placed at the east end of one of the chapels in Cirencester Parish Church. It is a memorial window, offered by Mr. Joseph Cripps, of Farm Hill, near Stroud. The subjects are the twelve apostles, each under a small canopy in the upper tier; and the four lower large lights are filled with representations of our Lord, with the family at Bethany, and at the grave of Lazarus (St. John, chap. xi.), each subject under a canopy. In the spandrils, there are angelic figures, bearing scrolls with an inscription—"As we have borne the image of the earthly, we shall also bear the image of the heavenly." The parishioners are taking the opportunity of improving the parish church by removing a gallery which would intercept the view of this memorial window. The minister and churchwardens are clearing the chancel of many seats that disfigure that part of the church. The window is executed by Warrington.——The Independents of Gloucester have been re-building their place of worship, after a design by Mr. Medland, the architect of the Worcester Lunatic Asylum. Amongst other embellishments is a painted window by Rogers, the gift of Mr. Ellis, a principal member of the congregation.——Upwards of 1,400*l.* have been subscribed towards the erection of the new chapel at Ladywood, Birmingham, on a site given by the Governors of King Edward's School. It is to contain 1,400 sittings, and the estimated cost is about 4,000*l.*, exclusive of the endowment. This, however, is already secured.——Mr. Boulton has given 500*l.* for the purchase of a site for a new church in the direction of the Soho Park, Handsworth, the inhabitants of which have held a meeting as to the best mode of carrying out the project, when subscriptions to the amount of 1,050*l.* including 100*l.* from Lord Dartmouth, and Mr. Boulton's donation, were announced!——

The new edifice, dedicated to St. Stephen, at the north end of Crown-street, Liverpool, near Brownlow-hill, is now nearly completed. The architecture is the geometrical decorated. The building is 115 feet in length, by 70 feet wide, and its general character is very plain. Seating for 1,000 persons is provided. There is a gallery at the west end for the use of the congregation entirely, as the choir and organ, according to ancient usage, will be placed on the ground floor, at the north-east end of the building. Mr. G. G. Scott furnished the designs for the building, and the contracts were taken by Mr. A. Dempster, of Liverpool.——Upwards of 3,000*l.* have now been subscribed towards the erection of a new church at Rugby. The building is to accommodate 1,000 persons, two-thirds free.——Mr. Hay, of Liverpool, architect, set out the foundations for the new parish church at Whorlton, near Greta-bridge, on Friday week, with Mr. Jones, of Barnard Castle, the contractor. The present church is in a ruinous condition, incapable of repair, and Mr. P. H. Stanton, with Archdeacon Headlam, of Wycliffe, came forward and paid a rate of 2*s.* in the pound for all their tenantry, besides handsomely subscribing to this purpose.——Mr. J. J. M'Carthy, architect, has been appointed to complete the works of the new Roman Catholic Cathedral, Armagh, the building of which was commenced ten years since by the late Roman Catholic Primate, Dr. Crolly. The late Mr. Duff, of Newry, architect, designed the edifice in question, the building of which was suspended owing to a want of funds.

VAUXHALL GARDENS.

These two-hundred-years-old gardens, with their long covered walks, open-air orchestra, thousand lights, fire-works, and supper-boxes, are again deservedly in full vogue, and all seem to agree with Pepys, as to them, that "to hear the nightingale (?) and the birds, and here fiddles and there a harp, and here laughing and there fine people walking, is mighty divertising." Very little change has been made; descriptions of the gardens in "England's Gazeteer," of 1751, would serve equally for the present 1851. Mons. Saqui is exhibiting some amusing combinations of coloured fires and water-works, which may give hints to our fountain-makers. Arena-riding is one of those arts in which progress seems very difficult. There are the same jumps through the same hoops, the same slashing of flags and throwing about of legs, which our fathers and grandfathers witnessed, and which, by the way, in connection with "Astley's," are amongst the earliest holiday recollections of nearly everybody. Oh! "those cherry tarts when I was young!" Horse-riding awaits its Newton! A great advance has been made in this practice by Palmyra Anato, now at Vauxhall: the grace and modesty with which the most difficult feats are performed by her are extraordinary, and will tend to a refinement of the art.

DINNER OF THE METROPOLITAN SANITARY ASSOCIATION.

Lord Carlisle took the chair at the dinner given by the Metropolitan Sanitary Association on the 10th, at M. Soyer's "Symposium," in the Kensington-road, and a large number of friends of sanitary reform rallied round him. Amongst them were the Bishop of Ripon, Lord Ebrington, Lord Robert Grosvenor, Lord Ashley, Lord Moreton, R. A. Slaney, M.P., Edwin Chadwick, Coroner Baker, Charles Dickens, George Cruikshank, Dr. Gilchrist, H. Austin, Ranger, T. Tooke, Rawlinson, Lee, Grainger, Crecy, Rogers, Walsh, Lusignan, C. Cochrane, Abrahams, Tottie, Lord, Hume, Southwood Smith, H. Roberts, Moseley, Colin Mackenzie, Barnett, and many others who have long laboured in the cause.

Lord Carlisle, in his principal address, urged forcibly the importance of this cause;—a cause, he said, which has its business with deaths that may be prevented, since, as we know, in districts where, from accident, more favourable sanitary condition exists, these deaths do not occur—with deaths arising from epidemic and contagious diseases which amount to some 50,000 in the course of every year—with deaths consequently outstripping in numbers the carnage of the most destructive campaigns and the most protracted wars—with deaths, moreover, which strike down those whom our modern warfare especially saves, and cuts off one-half of some districts of all who are born before they reach five years of age—with deaths, in fine, which threaten all, but especially those who fill the many walks of humble life. Such a cause as this is surely one of solemn importance, which we should do all we can to increase in the appreciation of all classes. I have alluded to the claims and the dangers of humble labour. We have, indeed, close to where we sit, a remarkable building, which is in itself a shrine of labour; but while we gaze on the large area of its vast extent—on the wondrous results of its harmonious and completed combinations—on all their gorgeous magnificence—let us not refrain from tracing them back to that crowded workshop, that damp cellar, and that stifling garret, in which so much of that collected mass of ingenuity and splendour has been elaborated. And we shall derive, perhaps, not the least precious lesson which the Crystal Palace itself, in all its completed maturity, and in all its glittering unity, can teach, if, transferring our care from the work to the workman, wherever it may be his lot to weave the slender thread or guide the ductile metal, we study as best we can to surround the scene of his daily labour with some portion of the decencies, the comforts, and the enjoyments with which he so plentifully enriches our own. There is too much reason to fear that the stimulus of drink is often resorted to as a diversion to the depressing effects of an uncleanly house or a polluted atmosphere. The chairman then pointed out the necessity there was for some independent body to keep the Government up to the mark of their duty, and called on the public to support the Metropolitan Sanitary Association, for that and other reasons.

This we cordially echo. The Association has already done great and extensive good, and it is desirous as well as capable of doing more. It needs but a moderate and a steady support from the public at large.

Mr. Dickens made an admirable speech—earnest, suggestive, and elegant;—a speech that touched every man's heart, because it came, and was *felt* to come, from the speaker's own. His toast was the "Board of Health," and he compared those who blamed the board for not moving faster, to a man who would not wind up his chronometer, and yet abused it for not going.

We must add a dozen lines about M. Soyer's new residence, Gore House, formerly the Countess of Blessington's, and these shall be to recommend a visit to it, not merely by those who want to dine (that is not exactly our province), but to all inquirers after novelty. We don't want our readers to turn their rooms into *Salles de Danaë*, or *Vestibule de la fille de l'orage*, or form "grottoes of eternal snow;" but they will see many pretty novelties and clever quips. Lord Carlisle paid a well-merited tribute of praise to Soyer for his endeavours to improve the cookery of the poor.

Metropolitan Commission of Sewers.—A general Court of Commissioners was summoned on Saturday last, for twelve o'clock, for the purpose of ordering works, hearing appeals, receiving presentments, affixing the seal to contracts, and ordering summons to be served on defaulters. After a delay of nearly an hour and a half, a sixth commissioner not being in attendance, the Court adjourned!

Price of Gas in London.—The tender of the Great Central Gas Consumers' Company for the contract to supply the gas for the public works has been accepted, it is said, at a rate of about 2*s.* per thousand cubic feet; and Mr. Dakin announces his hope that the price for private consumers will ultimately settle down to something like that rate. The lowest price now is 4*s.* the thousand cubic feet.

* Illustrations of the interior of the Museum will be found in our sixth volume, pp. 522 and 559.

GLASS PIPES

FOR CONVEYING WATER AND OTHER FLUIDS.

The deleterious nature of some of the metallic pipes now in use for the conveyance of water for domestic purposes, has of late strongly attracted the notice of the public, and should lead them to regard with favour Messrs. Swinburne's glass pipes, advertised in our paper. Glass, especially that kind which is made without metallic flux, is impervious to water for an almost indefinite period of time, and is therefore an admirable medium for the circulation and retention of water.

Although this quality has been long appreciated, the difficulty of making joints on glass tubes of a durable or effective nature has prevented their use. Any cementing substance of a high temperature, such as solder, would crack the glass, and most non-metallic cements of a saline or resinous quality bear little pressure, and are generally soluble. Messrs. Swinburne consider this difficulty is now entirely obviated, by their process in which a metallic collar or band is firmly fixed at the end of a glass pipe, and incorporated with its exterior substance. By this means glass pipes can be most easily joined together.

The price for the pipes, including the joints, is less than that of lead, and they are made of curved or rectangular shapes to suit the positions in which they may be required.

Books.

Letter to the Trustees of the National Gallery. By Colonel Rawdon, M. P. London: Ridgway, 1851.

Colonel Rawdon calls the trustees to account pretty sharply, for not taking steps to obtain more accommodation for bequests of works of art, and for permitting the injury which is being done to the pictures in their present position. He says,—

"Let the matter be but fairly explained in the House of Commons thus:—We find an error has been committed in placing our national collection where it is. That the increasing requirements of London have made the position worse than it was when first selected. We find that the building is also far from sufficient, neither permitting classification nor arrangement, and in other respects unsatisfactory. That with such evidence before us of the dangers arising to the pictures, we are not justified by those who may come after us, in recommending their remaining longer in Trafalgar-square. That however convenient of access it is, the inconvenience of going a little farther off is nothing to the evil of deterioration which the pictures now undergo. That we have not the means (putting climate aside) of adequately enlarging the building from time to time, as would be required. That we think a large portion of the building should be devoted to a British school. That those fine Rubenses which are at Whitehall, and the Cartoons at Hampton Court should form part of our national collection; but that it is neither safe, or if safe, there is not room now to allocate them. We believe, also, that patriotic individuals are deterred from leaving or giving pictures to the nation, from the idea (be it just or not) that their pictures would be endangered. Under these circumstances, we hope that you, as representatives of the people, will enable us to make provision for them elsewhere, in a building worthy of this great country, and becoming an object so connected with the gratification and enlightenment of the people. In order to preserve these treasures of art as long as human skill and foresight can do so, we see that it is essential to remove them somewhat from the focus of our great capital."

The colonel then recommends, as the place best suited for the purpose, the position first suggested in The Builder, namely, the site of Kensington Palace. According to the best authorities, the pictures are rapidly depreciating in their present locality; and this shows the necessity for an immediate consideration of the question.

Chemistry of the Crystal Palace: a Popular Account of the Chief Materials employed in its Construction. By Thomas Griffiths, late Professor in St. Bartholomew's Hospital, and Author of "Chemistry of the Four Ancient Elements," &c. Parker, West Strand, 1851.

Essentially this is a lucid treatise on glass and iron; but there are various other materials used in the construction of the "palace of glass," besides either the glass which its names recognise or the iron which they ought equally to recognise: indeed, out of fifty-six ascertained "elements of nature"—as we must not only call them but religiously regard them for fear of the criticism of those only conversant with school books of chemistry—exactly one-half of the number are employed in the construction of the Hyde Park building. The author's subject is, therefore, in one respect, rather an extensive one, but iron, glass, and wood are the chief materials, the first and last not being "elements," but resolvable into them. A great portion of the present little treatise is directly useful to the architect, engineer, and builder; and, indeed, even the more curious and less practical details are indirectly useful; for no one can have a correct idea of these materials unless he be acquainted with the more curious as well as the more useful portion of their history and phenomena.

The Newspaper Press Directory, containing full particulars relative to each Journal published in the United Kingdom and the British Isles, together with a complete Guide to the Newspaper Press of each County, &c. Third edition; entirely revised. By C. Mitchell; and published by him at his advertizing office, Red Lion-court, Fleet-street.

This publication is the only one of its class, so far as we are aware, and it certainly constitutes one of the most readable *Directories* we ever dipped into. The peculiarities and excellencies, as well as the defects, of the various journals, are hit off with an emollient truthfulness evidently derived from close and intelligent examination, and continued observance of the course through which each paper runs. We find ourselves, of course, reflected in this mirror of the press, and it is pleasant to perceive that we have no ugly deformity to answer for—as some of even our ablest contemporaries have,—and, therefore, and for other reasons, we do believe this to be a truthful mirror, without any visible twist of its own to distort the visages represented in it. There is a considerable mass of miscellaneous information as to the press, besides the Directory itself, and a dissertation on the law of newspapers.

Miscellanea.

Conversazione at Society of Arts.—The first of the proposed series was held last week in the Adelphi, and was attended by several of the distinguished foreigners at present in London, by the agents of the different foreign exhibitors, by some of the Royal commissioners, the executive committee, and a very large number of members and friends. Nearly half the visitors were ladies. By permission of Col. Jones, the band of the Royal Artillery was in attendance. The large room of the society was decorated with pictures, flowers and flowering shrubs, etchings, objects of art and manufacture, lithographs, &c. Refreshments were liberally supplied, and the overflowing company appeared to enter fully into the spirit of their agreeable *réunion*.

Enfranchisement of Copyholds.—The Bill brought in by Mr. Mullings and Mr. Coles, to extend the Acts for commutation of manorial rights, and for the gradual enfranchisement of lands of copyhold and customary tenure, proposes that, on application to the Copyhold Commissioners by the lord or by two tenants of any manor, the commissioners are to ascertain, by means of a valuer to be appointed by the lord, and a tenants' valuer, the value of heriots, reliefs, and the lord's rights to timber growing on the lands within the manor. Where the lands to be enfranchised are subject to arbitrary fines, or fines on improved value, or to stinted or other fines, the consideration to be paid for such enfranchisement will be ascertained as by the Lands Clauses Consolidation Act, with reference to lands taken for undertakings or works of a public nature, viz., by two valuers, or by an umpire agreed on by such valuers. To the valuation made there will be added as a compensation of any quit or other rents payable to the lord in respect of such copyhold lands, a sum equal to twenty-eight years' purchase in the amount of such annual quit or other rents. Valuers are recommended to take into account the probable increase in value by the enfranchisement itself.

The Inhabited House Duty.—By the new Act, if it pass as printed, the window duty is to be repealed from 5th April last, and the new house-tax substituted from that date as an assessed tax, under management of the Inland Revenue Commissioners. It has even been officially directed, it is said, that the assessors be instructed not to assess the window duty for the current year. The new bill, however, according to Lord Duncan, cannot be carried into act before the 5th of October. Where the Government may be by that time it is hard to say. We cannot believe, moreover, that they will allow the window-tax to lapse until they have secured the house-tax.

Prosperity of Birmingham.—The guardians of the poor have sold by auction a portion of some land which cost, in 1824, only 900*l.*, for no less than 5,000*l.* Much other property, including the Infant Poor Asylum and the old workhouse, remains to be disposed of, and such is the demand for property, that it is supposed that the proceeds will defray the cost of the new workhouse, now in course of erection for 1,500 inmates. Pauperism itself, however, is also said to be undergoing a remarkable diminution.

Antiquities on the Cliff at Winterton.—Whilst some labourers were excavating on the estate of Mr. W. H. Driffill, they cut across deep-laid foundations and a tesselated pavement of Roman workmanship. The floors are of the richest and most complicated designs, and contain representations of Orpheus playing on the harp and charming the beasts around him, viz., the lion, the stag, the bear, the boar, the pegasus, the dog, the elephant, and the fox; of Ceres, with emblematic ears of corn; and of a nymph, with the cornucopia; besides a great variety of chainwork, knots, frets, vases, and other ornaments, in five appropriate colours.—*Eastern Counties Herald.*

Amendment of Competitions.—It will be seen that the meeting called to consider this subject for the 23rd, is postponed till June 6th. Earl de Grey, as president of the Institute of Architects, has issued cards for a conversazione for the 23rd, which perhaps accounts for the change. Mr. Tite will probably take the chair at the meeting in question.*

The Timber Duties.—By Treasury order of 16th ult., the alteration of duties in accordance with resolution of House of Commons (since confirmed by Act of Parliament), on the usual condition of parties abiding the ultimate decision of Parliament, was directed by their lordships to come into operation from that date inclusive. It has been decided that the new and reduced rates of duty only are leviable on such timber and wood goods as had not been cleared on payment of duty and delivered until after the resolutions of the House of Commons came into operation.

Widening of Park-lane.—We are told that the Commissioners of Woods and Forests have decided upon widening Park-lane from Oxford-street to Grosvenor-gate, to the extent of 8 feet. This desirable step has been taken on the petition of the inhabitants, who have been required by the Commissioners to pay half the expense incurred. It is to be hoped that this thoroughfare will now be paved. Its present condition is not very creditable to the authorities.

* In our paragraph on this subject last week, the word *so* was printed for *or*, which altered the sense; but the error was probably obvious to most persons.

FOUL AIR IN WELLS.—I have a well 300 feet deep through chalk strata in which we are much troubled with foul air, arising, it is presumed, from carbonic acid gas, and which extinguishes a light when about half-way down. We have been in the habit of using a tin pipe with common blacksmith's bellows for forcing fresh air down it, and until these have been some time at work it is impossible to descend with a light. Being now desirous of providing some permanent remedy for the evil, I shall feel much obliged if any of your correspondents will favour me with the result of their own practical experience in similar cases. It has been suggested to fix an iron pipe of 1-inch bore from the top of the well to about two-thirds down, and to pass the nozzle through a furnace at the top, and thus create such a draft up the pipe as to draw off the foul air without mechanical means; but before adopting this course I should be glad to hear if any of your readers have tried it in a case of such depth. I have read the letters on the subject which appeared in your pages at the beginning of the year.—X. Y. Z.

FIRE-ESCAPES.—Your notice of fire-escapes in the article on the Great Exhibition, in the last number of THE BUILDER, has evidently no reference to the one numbered 75, Class 7 (Jackson and Clay, inventors), I believe, the only self-acting escape exhibited. It is in form of an ordinary bed-room table, the top of which being on hinges, turns over the window-sill, thereby forming a seat for the party while buckling round the waist a leathern belt. The copper wire cord by which a party is lowered passes over a pully in the end of a lever, which projects sufficiently through the window to clear all ordinary projections on the face of the wall. The inner end of the lever is so arranged as to form a break to the drum, round which the cord is wound, and the break is so adjusted as to allow any weight, from the infant to the heaviest adult, to go down at a steady uniform rate without any assistance whatever. The lever is jointed to double up into the body of the table alongside the drum, and the top shuts over all, so as to have all the appearance of an ordinary table.—C. W. J.

BAXTER'S PRINT OF THE EXHIBITION BUILDING IN COLOURS.—Mr. Baxter, the patentee of a mode of printing in oil colours, has published a view of the building in the park. The general tone is a little sickly, but the figures, large numbers of them, and of small size, are singularly well done.

PIPES TO CONVEY WATER.—In answer to the inquiry of Aquarius, in THE BUILDER of May 10, p. 305, the diameter of down-pipe may be 1¼ inches that of up-pipe 2 inches. But if "Aquarius" is prudent, he will take larger diameters for practical convenience.—J. N.

ARTISTS' BENEVOLENT FUND.—The anniversary dinner of the members and supporters of this fund took place on 10th inst., at the Freemasons' Tavern, Mr. Benjamin Bond Cabbell, M.P. in the chair, when various appropriate toasts were responded to with spirit by the meeting, which, however, we would have liked to have seen as numerous as it was cordial. Her Majesty's annual donation of 100 guineas was announced.

THE LATE MR. JOHN WHITE.—Many of our readers will have heard with regret of the death of Mr. John White, the district surveyor for Marylebone. A notice of his active life will not be uninstructive. His son, who has acted for him for several years, is a candidate for the vacant office.

TO CORRESPONDENTS.

"A. B." Hampstead (declined with many thanks), "A. E.," "J. T." (the Editor does not interfere as to advertisements. We state this week after week), "J. B." (ditto), "M. M." (ditto), "A Subscriber," "T. T.," "W. B." (declined with thanks), "B. W. S.," "C. F.," "E. A.," "D. D. K.," "J. N.," "N. B. S.," "C. B. A." (room can always be found in our pages for information communicated with good sense, good nature, and *good taste*), "Jack-Plane," "H. C.," "J. P. P.," "H. R.," "Mr. R.," "G.," "C. S." (the Dundee Arch is, we suppose, to be called *Norman*), "W. C. S.," "W. B." (write to the dock-yard master, and inquire), "M. & Co." (we shall be happy to see a specimen), "G. H.," "J. W.," "J. T. S." (what is the process?), "T. L.," "J. C.," "G. B.," "W. H. W.," "W. Y."

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor;" all other communications should be addressed to the EDITOR, and not to the Publisher.

ADVERTISEMENTS.

THE LONDON and WESTMINSTER BANK issues CIRCULAR NOTES for 10l. each for the use of Travellers and Residents on the Continent. These Notes are payable at every important place in Europe, and thus enable a Traveller to vary his route without inconvenience. No expense is incurred, and, when cashed, no charge is made for commission. They may be obtained at the head office of the London and Westminster Bank, in Lothbury; or at its branches, viz.: 1, St. James's-square; 214, High Holborn; 3, Wellington-street, Borough; 87, High-street, Whitechapel; and 4, Stratford-place, Oxford-street.
J. A. GILBART, General Manager.

TO ENGINEERS, IRON FOUNDERS, &c.

WANTED, to RENT, in the neighbourhood of London, small suitable PREMISES, for carrying on business in the above line. Premises having a Wharf, and in the neighbourhood of a Railway Station, would be preferred.—Address, stating full particulars, to C. H., Post Office, Paddington.

CANNON-STREET IMPROVEMENT.—BUILDING LEASES.—The Committee for Improvement within the city of London hereby give notice that they will meet at Guildhall on MONDAY, the 19th day of May inst., at One o'clock in the afternoon precisely, to receive TENDERS in writing, agreeably to a form to be obtained at the office of the City Architect, from parties willing to take BUILDING LEASES of sundry lots of GROUND on the south side of the new street of the corner of Queen-street. Plans and elevations can be inspected, and conditions seen, upon application at the Architect's office, Guildhall, any day except Sunday, between the hours of eleven and three.
Guildhall, May 3, 1851. MEREWETHER.

CARCASES.—TO BE LET, FOURTH-RATE HOUSES, with advances.—Apply to Mr. TATLOCK, Surveyor, Shrubland-road, Dalston.

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LARGE PREMISES TO BE LET, particularly adapted for the BUILDING TRADE.—For information apply at Mr. JOHN WALKER'S Offices, 63, Gracechurch-street, City.

TO BUILDERS AND OTHERS.

LAND TO BE LET OR SOLD, in different parts, 10 miles from London. Liberal advances made to builders as the works progress.—Address, O. P., Office of "The Builder," 1, York-street, Covent Garden.

FREEHOLD and LEASEHOLD BUILDING LAND, in the ISLE of WIGHT.—TO BE SOLD, several beautiful SITES for MARINE RESIDENCES, situate at RYDE, UNDERCLIFF, and WOOTTON.—The attention of builders and others seeking a good investment is called to the above valuable properties.—For further particulars, apply to Messrs. HEARN and NEWBY, Solicitors; or to Mr. W. BUTCHER, Architect and Surveyor, Ryde, Isle of Wight.

FREEHOLD BUILDING GROUND.—TO BE SOLD, or LET on Lease, about two acres of Ground, situated in the most desirable part of TWICKENHAM, near the Railway Station, and facing Pope's Grove. It has a frontage of upwards of 700 feet, and lies on the high road from London to Hampton Court, and with the ground will be granted the privilege of a private access to and from the River Thames. To parties purchasing or leasing cash will be advanced towards building first-class villas, and the money may lie, at the option of the borrower, for a period of seven years. It shall also be in the option of the lessee to redeem the ground-rent at any time during the first seven years.—For plans and further particulars apply to JAMES CLARK, 24, Billiter-street, London.

TO BE LET, with advances, term 100 years, CARCASES and BUILDING FRONTAGES, situate in GROVE-ROAD, UPPER HOLLOWAY, between Holloway-road and Tollington-park. Also, Carcases and Building Frontages, near the London Fields, Queen's-road, Dalston, term 95 years.—For further particulars apply to Mr. TATLOCK, Surveyor, Shrubland-road, Dalston; or Messrs. OVERTON and HUGHES, Solicitors, 25, Old Jewry.

TO BUILDERS, SAW-MILL PROPRIETORS, and OTHERS, requiring Roomy Premises.

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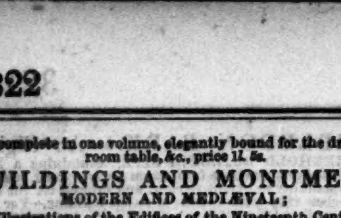

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